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REPORT OF FOUR CASES OF BRAIN SURGERY.[1]

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The localization of cerebral functions has in recent years become so accurate that it was naturally thought that much progress would be at once made in the surgical treatment of epilepsy. This anticipation, however, has not been realized; indeed, the treatment of this disease by operative measures is attended by results, as far as cure is concerned, but little better than those which were obtained a score or more of years ago. It must be confessed that the great advances made in cerebral localization have thrown but little light upon the nature or treatment of epilepsy. While it is true that certain cases of Jacksonian epilepsy have been permanently cured by operation, yet we must acknowledge that operations for the cure of true idiopathic epilepsy have been discouraging.

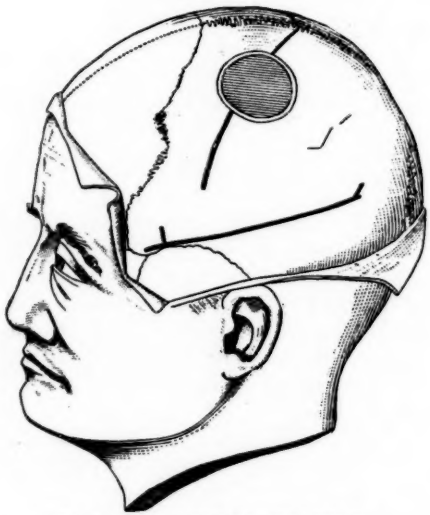
Experimentation on animals has thrown but little light upon the matter, and it is probable that most of our accurate knowledge must be derived from the observations of the pathologist and of the surgeon. On this account it is important that all cases which are related directly or indirectly to this subject should be reported. Individual cases which, while interesting, may not at the time of their report afford suggestions for the formation of general rules for diagnosis and treatment, will eventually, by comparison with similar cases, lead to inductions which will be of the greatest value.

[1] Read at the Pan-American Medical Congress, in Surgical Section.

Each one of the following cases contains some point of special interest:

CASE I. *Extra-dural hemorrhage; convulsions; operation; recovery.*—Male, aged eighteen years. On July 29, 1889, patient was found lying on the bottom of a trench in a semi-comatose condition. He had been in good health up to the previous night, when it was supposed that, while under the influence of liquor, he had fallen into the trench, which was six feet deep. The accident must have occurred after midnight, and he was brought to the Presbyterian Hospital at 8 A.M. On his admission he was very stupid, but could be aroused so that he gave his name, but not his address. Temperature, 100; pulse, 76. The scalp was contused in the occipital region, but there was no sign of fracture or hæmatoma. The pupils were symmetrical, and there was no paralysis. For twenty-

FIG. 1.



Case I. Location of clot, 2 x 2½ x ¾ inches.

four hours the patient showed the general symptoms of cerebral irritation (laceration)—lying on his side, with thighs drawn up, in a half-stupid state; he could be aroused by an effort, and would utter a peevish, irritable cry, jerk his arms, roll over on the opposite side, and lapse again into slumber. He refused all nourishment. His urine was drawn by catheter. At the end of twenty-four hours he became brighter, began to look about him, and drank his milk. By the fourth day there was marked improvement; he talked intelligently and asked questions, but his memory was deficient. By the eighth day (August 5th) he seemed almost natural, except for slight restlessness and occasional lapse of memory. His eyes were normal, and there was no paralysis. On the evening of this day slight twitching of the right foot and leg was noticed. On the ninth day this twitching was more noticeable, and in the evening it had extended to the right hand. There appeared to be no paralysis.

During the night he had an epileptic convulsion, beginning in the right foot and becoming general, followed by stupidity lasting half an hour.

On the morning of the tenth day (August 7th) another very short convulsion occurred. I decided in the afternoon to operate, and to expose the lower and posterior part of the motor area of the left side, as the symptoms indicated pressure at this point. The diagnosis was pressure by a blood-clot. On shaving the head no contusion or laceration of the scalp was found. By dissecting up a semicircular scalp flap the bone was exposed over the fissure of Rolando. There was no evidence of fracture or injury of the skull. With a three-quarter-inch trephine a button of bone was removed from over the centre of the fissure of Rolando. Immediately underneath a blood-clot was found, extending downward and backward. The opening in the skull was enlarged in this direction, following the clot until an opening two by two and a half inches was made. The clot was then removed in two or three pieces. It was oval in shape, three-quarters of an inch thick at the centre, and thinning out toward the edges.

The surface of the dura mater under the clot was roughened, but was not lacerated or apparently injured in any way. It was not opened. A director was swept around between the skull and dura, but no additional clot or sign of fracture could be discovered. The bone was not replaced. The scalp flap was replaced and sutured. The patient was returned to his bed at 4 P.M., and rapidly recovered from the anæsthesia. At 7 P.M. there was a slight convulsion, limited to the right leg and hand. No further manifestation of cerebral irritation showed itself, and the patient made a rapid and uneventful convalescence. He has been perfectly well ever since, earns his living as a bricklayer, and does not hesitate to go on an occasional spree.

CASE II. *Extra-dural hemorrhage; convulsions and paralysis; trephining; recovery.*—Boy, aged six years. On August 11, 1890, the patient fell down stairs and was supposed to have struck his head. He was unconscious when picked up and remained partially unconscious until admitted to the Presbyterian Hospital twenty hours later. For forty-eight hours after admission he lay quietly on his right side with thighs and arms flexed, and was apparently unconscious unless when disturbed, when he became irritable and restless, uttering sharp, peevish cries and pushing away his nourishment. Temperature ranged between 100° and 102°; pulse, 110 to 120. Pupils were equal and reacted. There was no sign of paralysis. The scalp was contused over the right temporal region. On the fourth day he became brighter, was less irritable, answered questions in a semi-rational manner, and drank his milk when told to do so.

On August 17th, the sixth day from the date of the injury, his general mental condition was very much improved; he talked intelligently, asked for food, and seemed quite happy. It was noticed, however, that sensation in the left arm and leg did not seem so acute as on the other side; there was no impairment of motion.

On the next day (seventh), in the morning, he had a distinct convulsion, limited to the left upper extremity, lasting one minute, and followed by an apathetic state for half an hour. In the afternoon another convulsion occurred, beginning in the left side of face and left forearm, and then involving the entire left upper extremity. Sensation was markedly diminished in the left arm and leg. The left upper and lower extremi-

ties toward evening were completely paralyzed. There was left-sided facial paralysis. During the night two similar convulsions occurred.

On August 19th (eighth day) the boy had two convulsions, beginning in the left hand and foot and involving the left upper and lower extremity and left side of face. His mental condition remained bright. No disturbance of sight, taste, or smell could be discovered. The eyes were normal. Complete paralysis of left upper and lower extremity persisted. Temperature, 100°; pulse, 90. The diagnosis was made of blood-clot pressing on the motor area for left arm, leg, and face; and, after consultation with Dr. W. G. Thompson, immediate operation was decided on. The contused scalp had recovered, and there was no external sign of injury. After anæsthetization a semilunar scalp flap was dissected free, and the skull exposed over the fissure of Rolando. The bone was bared over a space two and a half by three inches, but no sign of injury was found. With a three-quarter-inch trephine a button of bone was removed at a point over the fissure of Rolando, two and a half inches from the median line. On removal of the button, in the anterior half of the circle the dura appeared normal; but in the posterior inferior quadrant it was concealed by a blood-clot. The clot extended downward and backward, and the opening in the skull was enlarged by rongeur forceps in this direction until it measured two and a half inches in the antero-posterior direction and two inches from above downward. It was then seen that a fissure of the skull ran into the posterior part of the opening. On enlarging the scalp flap it was perceived that this fissure ran from above downward and slightly forward, and at its upper extremity was joined by another fissure which ran from below upward and forward. The portion of bone between the two fissures was triangular in shape, the apex one and one-half inches from the median line. This triangle of bone attached at the base was one and one-half inches long. It was cut away, and under it was found brain tissue deprived of the dura and somewhat lacerated. The rent in the dura was one and one-half inches long, and the edges having receded left bare an area of brain corresponding to the triangle of bone removed. The clot, which in the meantime had been removed, was oval in shape, two and a half by three inches, and about one-half inch thick at its centre. The cavity was irrigated with boro-salicylic solution, the scalp flap returned and sutured except at the lower posterior angle, where a rubber drain was inserted. No attempt was made to suture the rent in the dura, as it was found impossible to approximate the edges, and the brain tissue at this point appeared to be superficially disintegrated. The patient recovered quickly from the anæsthetic, and in his struggles he moved decidedly, though feebly, the left hand and forearm, which had been absolutely paralyzed before the operation, and which had lain limp and motionless when he was fighting vigorously with his right hand and arm at the commencement of anæsthetization. This ability to move the left arm remained only for a short time, and then for the next twelve hours the paralysis appeared as complete as before the operation. He remained, however, bright mentally, and there were no convulsions; indeed, after the operation not a single convulsive movement occurred. At the end of twenty-four hours he could move his left arm with distinct force, and very feebly his left foot. Sensation remained sluggish.

On the fourth day after operation there was a marked improvement

in his muscular power. There was a discharge of broken-down brain tissue through the tube, and apparently a tendency to hernia cerebri.

On August 26th (seventh day) this had ceased, and the paralysis of sensation and motion had almost disappeared. At the end of two weeks the boy was out of bed, without sign of paralysis. He has been in good health ever since; he has attended school, is bright at his lessons, and entirely free from pain, convulsive movements, or paralysis of either sensation or motion.

CASE III. *Trephining; drainage of lateral ventricle; recovery.*—Male, aged twenty-nine years, florist; gives a history of occasional attacks of unconsciousness ever since he was twelve years of age. He describes them as beginning with a sudden pain in the cardiac region, followed by tumultuous beating of his heart and ending in syncope or unconsciousness, which lasted for a few seconds and left him weak and exhausted. Convulsive movements had never been noticed. These attacks were very infrequent, sometimes two and three years intervening between them. The patient had always been of a nervous and excitable temperament, and from the history it was doubtful if the attacks were true epilepsy. His general health had been fairly good up to the time of an accident, which occurred on October 29, 1892. On that day, while carrying a stove down stairs, he was pushed from behind and precipitated to the foot of the stairs. He was stunned for a minute or so, but did not lose consciousness. A short time afterward, on account of the hemorrhage from a scalp wound, he was brought to the Presbyterian Hospital. On admission (October 29, 1892) two scalp wounds were found in the occipital region, each about two inches long. There was an extravasation of blood in the left eye and hemorrhage from the left ear. He was unable to raise his left arm. For the next few days he was very stupid. He would answer questions, but unless aroused he took no notice of his surroundings. His temperature ranged between 99½° and 100½°. The paralysis of the left arm gradually disappeared, and mentally he became brighter, though complaining of severe headache. By November 10th the paralysis had entirely disappeared, and though somewhat stupid and dazed, he was allowed to sit up. While sitting at the side of the bed in a chair he had a general convulsion, lasting ten minutes, followed by an apathetic condition for a couple of hours afterward, and by slight anæsthesia of the left arm. For the following two weeks he complained of headache and dizziness, but his mental state gradually improved. He had no further convulsive movements until December 3d, when a general convulsion occurred lasting two minutes. It was followed by complete anæsthesia of his left arm and leg and hyperæsthesia of the right side and marked tenderness of the cicatrix in the right occipital region. The reflexes were absent on the left side, and exaggerated on the right side, where there was also marked ankle clonus. On the following day these symptoms still persisted, and in addition partial loss of power of his left hand was noticed and extreme sensitiveness of his right eye to light. Gradual improvement took place, and in forty-eight hours more these signs had entirely disappeared. He was still, however, stupid and at times excitable, but on December 7th he felt well enough to leave the hospital, though strongly urged not to do so. He remained at home for nearly a month, during which time he had two convulsions. Immediately after his second convulsion, January 4, 1893, he was brought into the medical

side of the hospital in an extremely excitable and yet somewhat dazed condition. Temperature 101°, pulse 100.

January 5. A general convulsion, lasting six minutes.

11*th*. A general convulsion.

17*th*. A general convulsion.

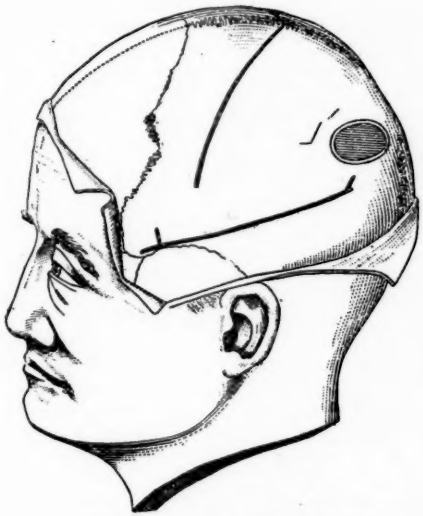
18*th*. Two general convulsions.

From the 17th to the 25th a general convulsion occurred every morning and often a second one at night. The convulsions lasted from three to ten minutes, and were very violent. There was no regularity in the muscles which were first affected. His mental state continued to grow worse; his memory was entirely lost; at times he lay in a stupid, almost semi-comatose state, and at times was excited and delirious. He complained of pain in the back of his head, and the slightest pressure on the occipital cicatrix caused him to cry out with pain. His temperature ranged between 99° and 100½°; pulse between 85 and 100. After January 25th he became steadily worse, the convulsions became more frequent, averaging five in the twenty-four hours; his stupor increased and he became quite irrational, sometimes for an hour or so remaining in a state of semi-coma, and then again becoming very restless and noisy. On January 28th, Dr. A. H. Smith, the attending physician, felt that unless relief could be derived from operation he could not live more than a week or two, and on the next day he was transferred to my service on the surgical side. In the meantime he had been examined by a number of neurologists and surgeons, and most of their diagnoses inclined toward syphilitic gumma or general paresis. Operative interference was, in the opinion of all of them, contra-indicated. Dr. Smith, however, sent him to me in the hope that he might be benefited. He remained under observation for three days more, during which time his symptoms remained very much the same, with the exception that his temperature ranged between 100° and 101°, and his pulse increased in frequency (110). He was at no time rational, lying for part of the time in a semi-comatose state, and then again became excited and delirious, imagining himself persecuted and making violent efforts to get out of bed. He was very hyperæsthetic over his whole body, but especially so on the back of his head and most markedly at the seat of the cicatrix in the right occipital region. His eyes were normal. His tendon reflexes were greatly exaggerated. As he was daily losing ground, both physically and mentally, I decided, on January 31st, to do an exploratory trephining.

He was anæsthetized with chloroform, and a semicircular scalp flap was raised, the cicatrix being in its centre. This cicatrix, which was situated just above the middle of the superior curved line of the right side, was found adherent to the bone. On exposing the bone a roughening and what seemed to be a stellate cicatrix was found. At this point, which was just above the lateral sinus, with a one-inch trephine a button of bone was removed. The inner surface of the button was roughened, but the elevations were smooth and comparatively slight, and certainly could have produced no depression of either the dura mater or brain. The dura was found thickened and roughened over an area three-quarters of an inch square, being perhaps twice its normal thickness. By rongeur forceps the opening was enlarged, mainly upward and inward. A flap of dura was raised. No evidences of clot were found, and the pia mater looked normal. There was evidently, however, a great

amount of intra-cranial pressure. The brain bulged out through the opening in the skull as if there was not room for it inside of the cranium. The cerebral tissue, covered by pia mater, projected through the opening in the skull half an inch beyond the external surface of the bone. Even after setting the patient upright this bulging was still very noticeable. This extreme pressure was naturally supposed to be due to excess of intra-cranial fluid, as no tumor or hardness could be felt on palpation of the brain substance, which, though congested, did not appear unnatural. A hypodermatic needle was thrust into the brain in three directions, but no pus or other fluid was obtained. It was then decided to tap the lateral ventricle, and for this purpose a long hypodermatic needle was passed into the right lateral ventricle and about

FIG. 2.



Case III. Location of trephining.

an ounce of thin straw-colored fluid removed. The needle of the aspirating syringe was then withdrawn and a trocar and canula thrust into the ventricle, and the canula left for permanent drainage. About thirty minutes more were consumed before the final dressings were applied, and during this time the fluid continued to issue from the canula at the rate of a drop every four or five seconds. It was estimated that nearly an ounce escaped in this manner. The canula was carried out through an opening made in the middle of the flaps of dura and scalp, which were returned and sutured. The patient recovered slowly from the operation, and for the following twenty-four hours was stupid and somewhat restless. In the second twenty-four hours he was brighter though still restless and irritable. At the end of forty-eight hours the canula, which had been so arranged by fixation to pads of gauze that it could not slip farther out or farther in, was removed. From the amount

of moisture on the pad, which absorbed all the ventricle fluid, it was estimated that between one and two ounces had escaped. This estimate, however, is unreliable, and the amount may have been much greater.

After the third day (February 3d) the patient improved rapidly. There had been no signs of convulsive movements since the operation, and he remained entirely free from even twitching of the muscles during his convalescence. At the end of a week he was quite bright and cheerful, talked intelligently, asked for food, was entirely free from delirium or delusions, and had perfect control of himself. The reflexes seemed to have returned to their normal state, the hyperæsthesia had disappeared, there was no sign of paralysis, and he was able to read his bedside notes. His eyes were examined and proved normal. His memory was still defective, and he complained of occasional headache. At the end of two weeks the patient was out of bed, bright, and cheerful. At the end of a month (March 1st) he was apparently well, and made himself very useful in the work of the ward. His memory of events during the past year was defective, but otherwise he seemed perfectly well. On one or two occasions, after excitement, he complained of headache, but otherwise had no pain. On March 24th, after an exciting interview with some of his friends, he had some twitching of the muscles of the face and hands, but no distinct convulsion. On March 28th he went out on a pass and was brought back by ambulance, in a very stupid state, evidently caused by alcohol. On April 3d he left the hospital, commenced drinking, and in the evening was carried to another hospital in a condition of semi-coma. Alcoholic intoxication was, however, evidently the cause of his mental state, as a day later he resumed work. He has reported to me within a week, seven months after operation. He has been at work for the past five months, and has not missed a single day. His health is perfect, he looks bright and happy, and his employers report that he is perfectly intelligent and trustworthy, and that his memory is good. He has no headache and no tenderness of the cicatrix. He has been intoxicated more than once without bad consequences. Indeed, up to the present time he is perfectly cured and there seems to be every prospect that the cure will be permanent.[1]

There can be no doubt that the operation saved this patient. It is difficult to name the disease or lesions which caused his grave symptoms. It is possible that the cicatrix in the dura was the cause of the accumulation of intra-cranial fluid. In many ways his symptoms resemble those of the disease which has been described under the name of meningitis serosa.

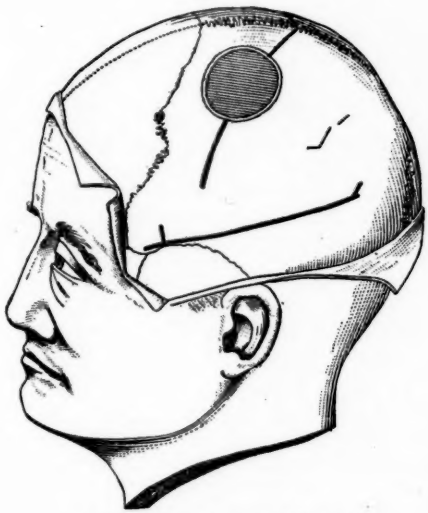
CASE IV. *Sub-dural organized clot; epilepsy; trephining.*—Female, aged six and one-half years; was kindly referred to me by Dr. M. A. Starr. The family history is good with the exception of the maternal grandmother, who was an epileptic. The mother reports that the child's health has been good with the exception of the fits. She states that at the age of one and a half years the child had a series of convulsions coming on suddenly without apparent cause, and lasting several hours. As a result, there was a partial paralysis of the right arm and leg, which

[1] January 16, 1894. The patient at the expiration of eleven and a half months from time of operation continues bright and intelligent, and no convulsions have occurred.

persisted for several weeks and then disappeared. The next convulsion occurred at the age of four years, and one fit followed another for two or three hours, and resulted in weakness of the right hand, which lasted for a few days only. During the next six months she was perfectly well. At four and a half years, there was another convulsion, without resulting paralysis, and at five years another severe convulsion, since which time she has remained partially paralyzed in her right arm and leg. For nearly a year no further convulsions occurred, though the paresis remained.

For six months previous to her entrance into the hospital (since September, 1892) she has had what the mother calls "spasms," in which the head turned always to the right, and convulsive twitching of the right hand and occasionally of the right foot followed. For the first

FIG. 3.



Case IV. Location of organized blood-clot.

four months, when she was without treatment, these averaged ten in the twenty-four hours; since treatment has been carried out, the average number has been four or five. On examination there was marked atrophy of the muscles of the right arm and forearm. She had very little use of the right upper extremity, especially of the hand. At times there was marked rigidity of the muscles of the hand and forearm, the fingers and thumb being flexed and tightly clenched in the palm. The circulation of the hand was impaired. Occasionally she could hold a large object in her right hand, but as a rule she was unable to take hold of any article. At times athetoid movements were present. There was slight atrophy of the muscles of the right leg and foot, and a distinct dropping of the toes (hemiplegic gait). Mentally the child is bright, though very bashful; eyes normal and general nourishment

good. Dr. Starr had made the diagnosis of pressure on the motor area for the right arm and leg, and sent her to me for operation. He advised an opening to be made over the arm centre, and accordingly, after reflection of a scalp flap, with a one-inch trephine, a button of bone was removed over the fissure of Rolando, about one and a half to two inches to the left of the median line. On removal of the bone, the dura was found to have been adherent to its under surface. By rongeur forceps the opening in the skull was enlarged downward and forward to double its original size. The dura seemed to pulsate less vigorously than usual. It was incised along the upper border of the opening and a flap turned downward. As the dura was reflected, its under surface was seen to be rougher than normal, and lying on the top of the pia mater was seen a translucent, reddish membrane. This membrane, which was about the thickness of a sheet of note paper, covered the area of brain exposed and extended beyond. It was lifted up and removed, but there remained a border which extended beyond the opening in the skull for about three-fourths of an inch, except at its lower part. This was afterward removed by a small spoon from under the dura, the patient's head being elevated.

So-called œdema of the pia was marked, the membrane being lifted off the brain by a layer of fluid nearly half an inch deep. The pia was incised between the veins in two or three places, and several drachms of fluid oozed out. As the fluid escaped it was seen that this part of the brain was depressed, as if the convolutions were atrophied. The brain on palpation appeared normal and there was no justification for further exploration. The flap of dura was replaced and sutured, as was also the scalp flap. The bone was not returned.

The child recovered quickly from the operation and showed very little shock. For three weeks following there was no special change for the worse or the better. The convulsions continued as before, as did the paralysis. It is now five months since the operation. The child has gained considerably in weight and appears brighter, but the convulsions have not been modified by the operation; they occur as frequently, and their character is the same. A slight improvement, however, has taken place in the paralyzed muscles; the child walks with less of a limp, and she can now grasp objects with her paralyzed hand. The muscles are still weak and lack proper co-ordination, but there is undoubtedly an improvement. I should consider the prognosis bad as far as the convulsions are concerned, but I should expect a further improvement of the paralysis. The membrane removed was undoubtedly an organized blood-clot, and the most probable cause of the hemorrhage was a pachymeningitis hæmorrhagica.[1]

[1] January 16, 1894. During the past four months the progress of the case has been most interesting. In the beginning of October the convulsions became more frequent, averaging from twelve to eighteen in the twenty-four hours. The patient was again admitted to the hospital for the purpose of inserting gold foil between the dura and brain. The child, however, had slight fever, and in a few days it was evident that she had typhoid fever. The case was rather severe and protracted. The remarkable fact about it was, however, that from the time the disease was well established not a single convulsion occurred. The child has now been well for about two months, and during this time she has been entirely free from any convulsive movements. She has grown considerably, and the partially atrophied muscles of her right arm and leg seem to be fuller and stronger, though a certain amount of paralysis still persists.

Within the last few months I have trephined three other patients for epilepsy. All have recovered from the operation, but it is as yet too soon to report on the results. The mere removal of a button of bone from the skull seems to improve nearly all epileptics for a few months, and it is rather misleading to report on the condition of these patients before sufficient time has elapsed for the disappearance of the amelioration which may be attributed to the operation *per se*.

THE EARLY DIAGNOSIS AND PRACTICAL SURGERY OF CANCER.

By Herbert Snow, M.D. Lond., etc.,
surgeon to the cancer hospital, london.

That a considerable proportion of the cases operated on for malignant disease fail to secure their due measure of success, simply for want of timely recognition, is, to the practical surgeon, a mere truism. The obstinate tendency of "cancer" to "recur" was of old explained by a supposed "constitutional origin." Modern science more correctly attributes this to the infective and autositic properties of the cells concerned, with the early transmission of nuclear fragments by blood or lymph currents to other parts than that primarily attacked. Hence the vital necessity for a prompt diagnosis, in localities amenable to the resources of surgery, of actual or potential malignancy, before this transmission has had time to take place, or at least to proceed very far.

To recognize a malignant growth in its later stages is always easy; to gauge with accuracy its real nature from the early inception of the disease-process is often extremely difficult. Yet a fairly confident idea of the state of the case may generally be acquired by due regard to certain *a priori* probabilities, in addition to the physical signs proper to each individual instance. Thus, malignant lesions are specially prone to attack degenerating organs and degenerating people. With the exception of a numerically small congenital group of tumors, which I have elsewhere classified under a special term, *Blastoma*, and which mostly differ from ordinary cancer in arising spontaneously, malignant new-growths are almost entirely restricted to women above the age of thirty-four, to men past forty. Further, they appear in organs which have fulfilled their functional purpose and are undergoing devolution, as now effete appendages, *e. g.*, the sexual organs of women; or else in tissues whose vitality has become conspicuously impaired, such as the buccal mucous tract of men. Hence we are bound to look with grave suspicion upon any incipient tumor-formation in these parts of the respective

sexes; in people growing old; in those whose general health and energies have, from any cause, become markedly undermined.

Thus in a judicial estimation of the *pros* and *cons* under such circumstances, the two items which most prominently demand attention are first, the *age* of the individual; and secondly, the *history* of the case. In the female mamma, the age of thirty-eight years forms a rough limit, which I have often found of great practical use. Under that period, there is much probability in favor of the non-malignant character of any doubtful "lump." The boundary is only not absolute, because in some women the mammæ begin to degenerate a little sooner than in others. We meet with a few instances of carcinoma as early as thirty-four, very rarely before that period. On the other hand, every tumor first noticed in the breast, at or after the thirty-eight-years epoch is, in the great majority of instances, primarily malignant; in the remainder is certain, sooner or later to become associated with malignant features in one form or another. From this sweeping rule, the most simple cyst within the gland parenchyma, a dilated acinus or dilated duct, is not exempt. In the course of a few years, such is found to undergo rapid increase, and produce severe pain. On removal, either carcinoma is found to have attacked the acini contiguous to the cyst-wall; or else intra-cystic vegetations, carcinomatous or sarcomatous, have sprouted within. Whereas, on the other hand, the "fibroma of adolescence," a hypertrophic induration in the mammæ of young girls, which presents some outward resemblance to an incipient scirrhus and often excites much needless alarm, is a very harmless affair, disappearing under pregnancy or with appropriate treatment, and rarely needing surgical interference at all.

Again it may be laid down as a practical axiom that no average species of malignant tumor in the adult ever appears without an adequate and generally ascertainable *exciting cause*. About 11.7 per cent. of cases of breast cancer follow sudden injury, a blow or fall; the remainder are consequent upon some agency, of a neurotic character, impeding the normal devolution of the mamma. Most often in these hard times, mental distress from loss of a relative, loss of money, etc., appears as the immediate antecedent; sometimes exhausting illness of any kind acts in the same manner. I have known one or two cases follow an attack of influenza. Failing these, we find an account of hard toil, privation, or of especially laborious occupation. Among the last named, laundry-work, in my own experience, stands pre-eminent. When a middle-aged woman comes to the Cancer Hospital with a breast tumor, and says she has been a laundress, I have learnt to regard the growth as almost certainly malignant.

To the uterus, again, which with the female breast furnishes more than half of all cancer cases, the same applies, excepting only that this

organ seems to commence its obsolescent stage a year or two before the mamma; and so cases of cancer at the age of thirty-four, or even earlier, are by no means uncommon. Exactly corresponding antecedents are here also found to have been in operation; the injuries suffered by the uterus at parturition or miscarriage parallel a breast-contusion; most of the patients have recently suffered great trouble. From the example of these two leading cancer sites, we learn to regard the age and the personal history as the two foremost elements toward correct diagnosis; not only in them, but with the majority of malignant developments elsewhere.

Having thus, first of all, considered *a priori* probabilities, we should then pass on to the signs, objective or subjective, known to be indicative of a malignant growth. Keeping before us the special female organs as illustrations, it may be noted that most mammary cancers are characterized by extreme *hardness* on palpation; yet this feature may be obscured by copious fat, and is wanting in the more acute forms. On the other hand, it may be simulated by a small chronic abscess amid dense fibrous tissue, as at the root of the nipple; by milk concretions, etc. The very intermittent *lancinating pain* of chronic (scirrhous) carcinoma is well known; but this also may be present in chronic suppuration, and is wanting in encephaloid (acute) carcinoma. Both pain and hardness are results of tension, of exuberant cell-growth within a stroma of resisting fibrous tissue.

Retraction of the nipple is an old text-book symptom, very often wanting, and extremely unreliable as an indication of cancer. Local *puckering of the skin* over the growth is a valuable physical sign in superficial scirrhus; is long absent when this disease begins in the deeper parts; does not occur at all in the acute (encephaloid) variety. *Enlargement of lymph glands* in the corresponding axilla is very early noticeable in these scirrhous patients; is readily obscured by fat, or by "softening;" is inconspicuous in encephaloid carcinoma until after excision of the breast, when it undergoes rapid increase. But some degree also attends chronic suppurative processes within the parenchyma; and the glands may have previously undergone slight hypertrophy from pregnancy, etc.; hence, it is always desirable to examine both sides. A careful estimation of all the conditions, present and past, generally leaves very little room for doubt as to the nature of any suspicious case in a woman of the cancer age. An *exploratory incision* will often save a valuable life, and can never do appreciable harm.

Hyperæmia is a marked feature of all malignant diseases from the very first. In uterine lesions, early and obstinate attacks of hemorrhage, or progressively aggravated hemorrhage, in a woman who, on the grounds formulated above, may be regarded as predisposed to cancer, is the natural consequence, and should induce a prompt local examina-

tion. Obvious *physical weakness*, daily increasing, *lumbar pain*, *fetid discharge*, are phenomena which confirm suspicion of cancer, but which may also proceed from other causes.

The male sex differs conspicuously from the female in the non-possession of structures which, like those above referred to, pass through a period of activity followed by a long stage of devolution and of entire inutility to the organism. So men furnish a relatively small proportion of cancer cases; and would even less often thus suffer, were it not for certain noxious habits. They are necessarily more prone to sarcoma than women, from their more laborious occupations and greater liability to hard knocks or sprains. But the majority of male cancer-patients suffer from epithelioma of the lips, tongue, or buccal tract generally, the mucous membrane having previously become unhealthy and of low vitality. A very considerable proportion show marks of antecedent syphilis; others are alcoholic individuals, who also smoke, both of which practices directly deteriorate the epithelium. Men of the laboring classes rarely pay the attention which women do to cleanliness. The mouth in particular is commonly foul, and decayed tooth-stumps are seldom interfered with; hence the natural sequence of epithelial cancer, almost invariably the manifest result of neglect.

A form of cancer common to both sexes, which is specially apt to be confounded with a non-malignant affection, is that which primarily attacks the lymph glands. Twenty-four cases developed in superficial glands are cited, with their mode of causation, in my work on *Cancers and the Cancer-Process*, p. 337; those which have appeared in the deeper organs are generally viewed and reported as "round-celled sarcoma of the small-celled variety." This species is commonly referred to as "lympho-sarcoma;" as the word "sarcoma" is already so overloaded with diverse meanings, I prefer to entitle it "lympho-carcinoma," a term much more in accordance with its clinical course and natural affinities. It is also not seldom spoken of as "lymphadenoma;" but it has nothing in common with the malady to which that title more correctly appertains, viz., Hodgkin's disease, a general pyrexial disorder, involving the *synchronous* enlargement of numerous glands throughout the body, usually after exposure to cold and wet. The cancerous neoplasm, on the other hand, follows traumatism, and is always gradually diffused from a single centre. Lympho-carcinoma unfortunately begins as a painless, gradual enlargement, first of a single gland, then of a cluster, in no way differing from that so often seen in young, delicate people of strumous tendencies. Here, however, we must particularly note the diagnostic value of antecedent probabilities. In children and the youthful of both sexes, the lymph glands readily enlarge on slight provocation; in the old, the reverse is the case, and with such the slightest increase in bulk is highly suspicious. The cancerous process in these organs is

seldom found under the age of thirty-four, and is usually consequent on a blow or strain. Thus an enlarged lymph gland in the neck, axilla, or groin of a boy of fifteen is assuredly not malignant—at least, primarily so; whereas one exactly similar in outward appearance, only occurring in a man of forty, not associated with an obvious septic cause in the vicinity (*e. g.*, suppuration, syphilis, diphtheria) and following no mechanical injury, will almost as certainly prove to be an incipient cancer. Yet I have seldom or never met with one of these distressing cases, examples of one of the most virulent and rapidly extending forms of malignant lesion, in which the primary growth has not been assiduously painted for weeks or months with iodine. Such delay has necessarily involved extensive diffusion to distant glands and viscera, with consequent sacrifice of life. A prompt exploratory incision, followed by very free extirpation of all the glands which can be found near the diseased area—whether of increased dimensions or not—would alone have offered a chance of rescue.

In arriving at a conclusion upon any doubtful case, it is thus always desirable to employ both general and local considerations to mutually balance and control one another. Of the need for this rule, too often neglected, the case of the late Emperor Frederick affords a striking example. He was a man of fifty, and had occasion frequently to induce congestion of his vocal cords in the issue of martial orders. When, therefore, he began to suffer from steadily progressive laryngeal symptoms, the *a priori* probabilities in favor of epithelial cancer were very considerable. Yet in fallacious reliance upon certain microscopic indications of no more than merely negative value, the only measure which afforded a prospect of cure was rejected, with quickly fatal result. The same historical event further demonstrates what is familiar to the practitioner in cancer, that the microscope for diagnostic purposes is of doubtful use. Its conclusions may be taken without hesitation, for positive purposes; but rarely or never for the negative. They may show that cancer is present, but cannot be trusted to prove its absence.

When we pass to matters of treatment, it is of equal importance not to lose sight of general principles. Malignant growths destroy life, as has been pointed out, by means of their infectivity, and by the metastases secondarily transmitted to more or less distant parts. The primary tumor often does little, sometimes practically nothing at all, to kill the unfortunate patient; it is the secondary offshoots with which we must grapple, if we wish to effect a cure. Now, carcinoma and epithelioma, very rapidly, as a rule, infect the chains of lymph glands in the track of the lymphatics leading from the part affected. And the consequent increase in bulk of these glands does not palpably ensue, until they have been for at least several weeks the seat of malignant parenchyma. It is thus of vital importance always, in surgical excision of these

lesions, at the same time to remove thoroughly all the dangerous lymph glands in the "infection path;" and this, if possible, *before enlargement has been suffered to take place.* In the proper working out of this maxim, combined with early diagnosis, lies all the best hopes of improvement in the cancer-surgery of the future.

On the other hand, a true sarcoma does not (unless in very rare instances) attack adjoining lymph glands, by way of the lymphatic vessels. If then we find these stuctures enlarged in the neighborhood of such a tumor, we know that there are cell particles circulating in the blood, with concurrent visceral metastases; hence, that the case is beyond the hope of cure by an operation.

For surgical purposes each individual instance of malignant disease must be regarded, and carefully dealt with, on its own merits. We have, in the first place, to consider the particular species concerned, with its liability to infect the lymph glands. Next we must think of the organ attacked, and of its relations; of the tissues which are most readily involved, or which resist the advances of the infiltrating cells; of the age or physical condition of the patient; of the best methods of operating, etc. It is material to remember that, unless encapsuled, the palpable tumor-formation constitutes only a fractional portion of the part actually diseased; impalpable cell-colonies lurk far beyond the visible limits of the former. Fasciæ, capsules, tough fibrous structures in general resist the inroads of the advancing cell-army; soft and vascular tissues readily yield. Under some circumstances, as commonly when the tongue is the seat of advanced cancer, it is advisable not to expose the individual to any considerable hemorrhage; and a burning instrument, such as the galvanic écraseur, is preferable to the knife or scissors. Local escharotics are useful for small superficial lesions, never for such cancerous growths as infiltrate the tissues deeply; the best is *potassa fusa*, its action (and with this all pain) ceasing instantaneously on contact with water. *Tinct. chloride* is efficient, but horribly painful and barbarous. Even for purposes of temporary palliation it is often of more advantage to the woman to clear out thoroughly her axilla than to amputate the primarily affected breast. Severe and protracted operative procedures upon persons already in an exhausted condition from long-standing malignant disease are greatly to be deprecated. Under existing conditions of practice, wherein cancer is seldom brought under the notice of the operating surgeon in its incipient stages, comparatively few operations should take place; but these should be searching and thorough. We shall do far more in the future by carefully perfecting those methods of treatment we already possess than by too eager a search for novelties.

Regarding cancer, lastly, from its medical aspects, nothing is more pernicious either to the sufferer or to the profession than the custom,

which has somehow crept in, of withholding *opium* from the average patient until he or she is worn out with pain. This it is which, combined with the results of hesitant diagnosis, so conspicuously impels these unhappy people to the ever-blatant quack. Opium, persistently given from the earliest moment at which there is reason to believe the disease incurable by surgical means, not only materially prolongs the individual's life, but also has often a most marked influence in arresting the progress of the growth. A carcinomatous breast thus dealt with previously to the stage of ulceration may often be successfully diverted from a rapidly advancing tumor into that withered "atrophic" induration which permits many years of fairly enjoyable life. With this should be conjoined as passive and vegetative a mode of existence as possible; and to such, careful nursing will materially conduce. *Cocaine-hydrochlorate* internally administered is a useful adjunct to the opiate treatment. Its advantages are best seen in malignant disorders of the alimentary canal. Iron, arsenic, quinine, tonics in general are useless, except as *placebos*.

A DOUBLE OVARIECTOMY, PERFORMED FIFTY YEARS AGO BY THE LATE DR. JOHN L. ATLEE, OF LANCASTER, PENNSYLVANIA, UPON A LADY WHO IS STILL LIVING AND IN EXCELLENT HEALTH.

By Robert P. Harris, A.M., M.D.,
of Philadelphia.

One of the great defects in surgical records is that they so rarely enlighten us upon the subsequent histories of cases reported as "recovered" or "cured." The term used often simply means that the patient did not die as the direct result of, or as a sequence to, a dangerous operation. We all know that the prolongation of life as the effect of a surgical measure should not be taken as evidence that all of the pain, suffering, or disability in the case in question, has been set at rest. Many a life has been prolonged, with a conviction that the restored health could only continue for a season; and many an extended existence has been one of very doubtful value to the still suffering victim. Absolutely perfect cures, remaining such, without any accompanying drawback, are of such a measure of interest that they should be specially noticed; and this is peculiarly obligatory when the patients have survived through a long series of years. We therefore take great pleasure in recording a case which has several features of note, viz.: 1. The patient has lived longer after an ovarian exsection than any subject whose case is on record. 2. As far as can be ascertained, she was the first woman from whom two ovarian tumors were exsected at

one operation, in any part of the world. And 3. She was the first subject upon whom the late Dr. John L. Atlee performod an ovariectomy, out of his list of eighty cases, covering a period of forty years.

It will be noticed that I use the term "ovariectomy," just as we do "hysterectomy," "nephrectomy," and "splenectomy," in place of "ovariotomy," which certainly does not excise or extirpate. I do not like either term, because they are compounded of Greek and Latin; but if it is proper to use "ovariotomy," it is more correct to use "ovariectomy" in the sense in which the former is usually applied as a surgical term. And besides, ovariotomy is much the older operation of the two, dating back to a period one hundred and eight years earlier, or to 1701, while the exsective method of Ephraim McDowell, of Danville, Kentucky, was not inaugurated until 1809. Mr. Robert Houston, of Glasgow, made the first incisive operation (ovariotomy) in 1701, and Mr. Lawson Tait was *technically* correct in claiming an "ovariotomy" for him; but there is nothing in Houston's report that can be strained to convey the idea that he exsected an ovarian cystoma, although the woman was cured and lived thirteen years. Other ovarian sections, *incisive* and *not exsective*, have been from time to time performed since the day of Houston, and are still occasionally resorted to as a matter of safety. The late Dr. George H. Lyman, of Boston, collected up to 1856, seventy-three cases of true ovariotomy, of which twenty-two were cured, twenty-one died, and thirty were "not radically cured," a fistula still remaining. I have seen a perfect cure follow in three weeks after incision, washing out the densely adherent cyst, and drainage, in a case where the whole interior structure of the ovarian multilocular growth had lost its vitality and been broken down through loss of vascular support.

To cut down upon and remove the cystic ovary, as in the Crawford case under McDowell, required a great deal of boldness in the surgeon, and nerve in the subject, who well deserved her restored health and thirty-two years of prolonged life.[1] We must bear in mind that early ovariectomies during nearly half a century were endured without anæsthesia; also, that surgeons down to the day of Mr. William Jeaffreson, of Framlingham, England, in 1836, always opened the abdomen by the long incision; and that many continued to do so, as Dr. Atlee did, until a much later period. The knife now, and fifty years ago, is, and was, looked upon with very different degrees of dread and fear of results. To talk surgery to the unprofessional ear in these days of anæsthetics and antiseptics does not excite one-tenth of the antagonistic distaste that it did fifty years ago. Operations without pain, and with a minimum risk of death, have in recent days revolutionized the whole field of sur-

[1] From the age of forty-six to seventy-eight.

gery, and we who have lived long enough can appreciate the change. It required very persuasive powers, and a manner and character to inspire confidence, to secure a willingness on the part of Dr. Atlee's patient, who belonged to the higher walks of life, to accede to his proposed operation for her radical relief.

The late Dr. John L. Atlee was born in Lancaster on November 2, 1799, and had been a graduate of the University of Pennsylvania for twenty-three years when he undertook the operation in question in his own city, where he must have felt that a failure to succeed would almost ruin his professional standing. Mild, gentle, and amiable, he had moral and physical courage in abundance when convinced that he was in the line of his duty. He had studied the case of his patient for three and a half years; had tapped her on several occasions; had utterly failed in arresting her disease by medical treatment long kept up; and her rapidity of ascitic accumulation made it a question of operation, or in a short time, of death; hence his determination to adopt what was then a very desperate alternative. He deserved and obtained success, and the lady has been amply repaid for the confidence she reposed in him.

As a full report of the case appeared in THE JOURNAL for January, 1844, it will only be required now to note certain salient points.

Miss C. R. P., at the age of twenty-four, in October, 1836, first discovered a change in her abdominal contour, having been led to notice it by an attack of pain in the left iliac region lasting a few days, and accompanied by flatulence. After a few weeks she had a similar attack upon the other side, and in time her abdomen became sensitive to pressure, enlarged from an accumulation of ascitic fluid, and finally required tapping, which was performed on June 2, 1838, five years before her ovariectomy, when twenty pounds of fluid were drawn off. She came under the entire care of Dr. Atlee on December 6, 1839. After the performance of a third tapping, in 1841, there was an apparent arrest of the disease for four months, after which she again filled up, and was tapped for the fourth time in July, 1842. In December, 1842, Dr. Atlee tapped her again, and removed twenty-two pounds. On May 13, 1843, she was tapped for the sixth time, and thirty-two pounds of fluid had accumulated in five months. After the evacuation, palpation revealed the presence of a tumor in the pelvis, and a vaginal exploration in addition made it evident that there were two, which were believed to be ovarian and the cause of the effusion of ascitic fluid. It was then decided to remove these morbid growths, which was accomplished on June 29, 1843, when the season was favorable.

By the time of the ovariectomy, forty-seven days, there had accumulated twenty pounds more of ascitic fluid, and this being removed, the abdomen was opened in the *linea alba* to an extent of over ten inches. This long incision brought the two tumors into view, and the right one was drawn upon for removal, and its adhesions in the pelvis separated. Three silk ligatures secured its connections against hemorrhage—one being applied to a band of bloodvessels feeding the growth, a second to an artery in the adhesions, and a third to the pedicle proper, including

the Fallopian tube. This tumor when *in situ* projected four inches above the *linea ilio-pectinea*.

The left tumor was smaller, had formed no inflammatory adhesions, projected above the pectineal line about two inches, and was easily lifted out of the pelvis, after which it was secured by two ligatures and then cut away. The five ligatures, having one end cut off near the knot—which was then the habit in amputations and extirpations—were brought out at the lower angle of the wound and secured, and the abdominal cavity was cleansed by sponging. The wound was now closed by seven sewing-needles inserted at intervals of an inch, and wound in the figure of 8 form with silk, as in the hare-lip suture, strips of adhesive plaster being placed between them as an additional security.

The right ovarian tumor weighed eighteen ounces; was semi-solid; was composed of six or eight cystic growths, and bore upon its top an eminence consisting of numerous small hydatids of a cream-color.

The left tumor weighed fourteen ounces, and was composed of four cysts. The two tumors had been of very slow growth, as they had evidently been forming for more than six years, an evidence at the time that there should be no fear of malignancy. Undeveloped ovarian cystomata such as these were not the form of cystic growth removed in the time of McDowell, which were usually large and bag-like.

The lady made a good recovery, and was only bled once, which was to the extent of ten fluidounces, eleven hours after the operation, when her pulse rose to 136, but it fell to 120 after the venesection. There were no alarming symptoms during her convalescence after the first twelve hours, although there was a traumatic excitement of pulse until the needles were removed on the fifth day, after which it fell to 100. At this time the abdominal wound was found to have united by the first intention, and to present no appearance of inflammation. The silk windings of the needles were not removed, as they helped to secure the sides of the wound in apposition. The pulse did not fall below 80 until the eighteenth day.

The first of the five ligatures came away on the fourteenth day, and the second on the fifteenth. The fourth held on for fifty-eight days, and the last for eighty-nine; this one enclosed the Fallopian tube. The fistula, kept up all this time, healed very soon after the last ligature came away, which happened on September 26th, when she was away on a visit.

The patient was remarkably well by the tenth day, with a clean tongue, sleeping well, able to sit up, and to walk several times across her room. On July 20th, three weeks after the operation, she took a ride of two miles, and, two days later, of five or six miles; and on this date, Saturday, July 22d, the doctor ceased his regular attendance. The protruding ligatures occasioned some bladder trouble, as they passed around this viscus, and irritability was increased when they were rendered tense, in the hope of hastening their removal.

Great improvements have been made in the technique of this operation in the past fifty years, but better curative results have never been attained. The form of suture adopted by Dr. Atlee is one of the oldest in surgery, and one which was a great favorite with him in securing wounds. It has, perhaps, gone entirely out of date in the closure of

long incisions; the interrupted suture having been recommended for abdominal work in the days of Ambroise Paré, three hundred and fifty years ago.

At the time of her operation Miss R. was thirty-one years old, and in a condition that must soon have proved fatal. She became eighty-one in June last, and has outlived the operator, his brother who assisted him, three of the four invited physicians, and the three medical students present. Of this party of nine, Dr. J. August Ehler, of Lancaster, a graduate of 1841, alone survives. Miss R. is of average height, erect, and weighs about one hundred and twenty pounds; is in full possession of her faculties, moves about the house freely, walks out and to distant points, corresponds with her friends, and is a remarkably well-preserved woman for her age, having an appearance of about sixty. In a letter written by her on the semi-centennial celebration of her operation, in which no tremulousness of hand appears, she says: "I am glad that I submitted to the dangerous and painful ordeal, so that others might be benefited by the increase of light gained through the operation of which I was the subject."

It is hardly probable that this case can be paralleled in any part of the world; if it can be, it is to be hoped that this report will bring the case to light. I reported in the JOURNAL for October, 1885, an autopsy made upon a Cæsarean subject, who survived her operation half a century and outlived the operator and all who were invited to see her delivered of a baby who still lives at the age of fifty-eight; but such cases of longevity in health, after capital operations, are of very great rarity thus far, although in the improvements in our science and the number of subjects operated upon, they may become less so in the future. As women sometimes have ovariectomies at a much younger age than our subject was, it is quite possible that even sixty years of survival may yet be reached.

It will be of interest here to take a retrospective view of the progress made in ovarian exsection during the thirty-four years of its performance prior to the operation of Dr. Atlee, in 1843. Up to that time no one had operated more frequently, or with better success, than its originator, who had made eleven *completed* exsections, and saved eight women. In a special record, prepared with much labor, covering the period named, and from which I have excluded all incomplete operations, I have collected in order 44 cases, 29 of which recovered, or 66 per cent., a little better general average than was attained in later years for a long period. Could Dr. Atlee have known all that we know now about this record, he would have felt still more hopeful as to an anticipated cure.

In the early days of ovarian exsection there were many operations that were not brought to completion, and in cases prior to that of Dr. Atlee,

where both ovaries were found diseased, it was the common practice to remove only the one which was most developed. His was a peculiar case, as the dropsy was not ovarian, and the cysts of the two organs were in an undeveloped stage. We have not been able to find any instance of a double ovariectomy prior to his operation.

COMPLETED OVARIECTOMIES PRIOR TO THAT OF JUNE 29, 1843.

No.	Date.	Operator.	Age	Locality.	Result.	Cause of death.
1	Dec. 13, 1809	Dr. Ephm. McDowell.	47	Danville, Ky.	Recov.	
2	May, 1816	" "	...	" "	"	
3	April 1, 1817	" "	...	" "	"	
4	May 11, 1819	" "	...	" "	Died.	
5	May 16, 1819	Dr. Chrysmar.	47	Isny, Wurtemberg.	"	
6	?	Dr. Ephm. McDowell.	...	Danville, Ky.	Recov.	
7	?	" "	...	" "	"	
8	June, 1820	Dr. Chrysmar.	38	Isny, Wurtemberg.	"	
9	Aug., 1820	" "	38	" "	Died.	
10	July 5, 1821	Dr. Nathan Smith.	33	New Haven, Conn. (At Norwich, Vt.)	Recov.	
11	July, 1822	Dr. Ephm. McDowell.	...	Danville, Ky.	"	
12	May 12, 1823	" "	...	" "	"	
13	May 23, 1823	Dr. Alban G. Smith.	30	" "	"	
14	?	Dr. Ephm. McDowell.	...	" "	Died.	
15	?	" "	...	" "	Recov.	
16	?	" "	...	" "	Died.	
17	Feb. 27, 1825	Mr. John Lizars.	36	Edinburgh.	Recov.	
18	Mar. 22, 1825	" "	...	"	Died.	In 56 hours, of peritonitis.
19	.....	Dr. Ehrhartstein.	31	Germany.	Recov.	
20	Sept. 14, 1829	Dr. David L. Rogers.	20	New York.	"	
21	Nov., 1830	Dr. John C. Warren.	40	Boston.	Died.	Hemorrhage from slipping of the ligature
22	1832	Dr. Ritter.	31	Germany.	Recov.	
23	1834	Dr. Groth.	....	Schönmoor, Germany.	Died.	In 16 hours, from hemorrhage.
24	Nov. 18, 1834	Dr. C. F. Quittenbaum.	...	Rostock, Germany.	Recov.	
25	Dec. 23, 1835	Dr. John Bellinger.	35	Charleston, S. C	"	
26	May 8, 1836	Mr. Wm. Jeaffreson.	....	Framlingham, Eng.	"	
27	1836	Dr. Janson.	....	Frankfort, Germany.	Died.	
28	July 12, 1836	Mr. R. C. King	....	Suffolk, Eng.	Recov.	
29	Sept. 27, 1836	Dr. Dohlhoff.	23	Magdeberg, Ger.	Died.	In 60 hours, general peritonitis.
30	Nov. 2, 1837	Mr. W. J. West.	45	Tunbridge Wells, Eng.	Recov.	
31	1838	Dr. Crisp.	....	Suffolk, Eng.	"	
32	1838	Dr. Schott.	....	Frankfort, Ger	Died.	
33	1839	Mr. W. J. West.	....	Tunbridge Wells, Eng.	Recov.	
34	Sept. 9, 1840	Mr. Benj. Phillips	23	London.	Died.	
35	April 30, 1841	Dr. Stilling.	22	Kassel, Ger.	"	In 3 days, from hemorrhage.
36	1841	Dr. Hayny.	....	Jungbrenzlau, Ger.	"	In 6 weeks.
37	Sept. 12, 1842	Dr. Charles Clay.	46	Manchester.	Recov.	
38	Oct. 7, 1842	" "	57	"	"	
39	Nov. 6, 1842	Dr. D. H. Walne.	58	London	"	
40	Nov. 8, 1842	Dr. Charles Clay.	39	Manchester.	"	
41	1842	Dr. C. F. Quittenbaum.	....	Rostock, Ger.	"	
42	Mar. 10, 1843	Dr. Charles Clay.	35	Manchester.	Died.	In 27 hours, hemorrhage from pedicle.
43	May 30, 1843	Dr. D. Henry Walne.	57	London	Recov.	
44	June 26, 1843	Dr. Frederick Bird.	35	"	"	

Recovered, 29; Died, 15.

Of the 44 exsections noted, only 16 belonged to the United States, and these were performed by six operators, who saved 12 women, or 75 per cent. They were: Drs. Ephraim McDowell, of Danville, Ky. (11); Nathan Smith, of New Haven (1); Alban G. Smith, also of Danville

(1); David L. Rogers, of New York (1); John C. Warren, of Boston (1), and John Bellinger, of Charleston, S. C. (1). Of the 28 foreign operations, England had a credit of 13, with 11 recoveries; Germany of 13, with 5 recoveries, and Scotland of 2 cases, of which 1 recovered.

Mr. Charles Clay, of Manchester, England, was the second to become famous as a special operator, and through him a decided impetus was given to the method of cure in his own country. He commenced to operate in September, 1842, and had 5 cases, with 4 recoveries, before Dr. John L. Atlee commenced. Mr. Clay was an advocate of the long incision, and lost 6 out of 10 cases under it in 1843; while Dr. D. H. Walne, of London, who operated by the short incision, saved 4 out of 5 in the same year. Mr. Clay did better subsequently, as he saved 12 out of his first 20, and 26 out of 40, or 60 and 65 per cent. respectively, which we should think a high rate of mortality now, when reduction in death-rates is the special claim of surgery.

The introduction of anæsthesia and antisepsis revolutionized the whole domain of abdominal surgery, and had a marked effect upon operations for the exsection of ovarian cystomata, which it was found could be removed with improved advantage through a very small opening; and the advocates of the long incision were obliged to change their views and adopt the more simple method. Gradually the mortality was reduced until Dr. Thomas Keith, of Edinburgh, was enabled to save 73 women in order, and to operate 100 times with only 3 deaths.

Dr. John L. Atlee was a general practitioner of medicine, surgery, and obstetrics; was not in any sense a specialist; and was by no means fond of using his knife, although sometimes derisively denominated "an old belly-ripper," as he once informed me. In his report of the case of Miss R., when he was just entering upon his career as an ovariectomist, he wrote as follows: "No one can be more disposed than myself to condemn the rash or wanton use of the knife which we see frequently exhibited. True, surgery would endeavor to banish it if possible from the list of remedies; and by a faithful application of such means as observation and experience have proved capable of exerting an influence upon the various functions of the body, endeavor to control its morbid states, and restore its primitive integrity. Unhappily this is not possible; our means are still too limited; resort must be had to the knife, and the case above detailed proves its efficiency and safety."

Dr. Atlee was the beau ideal of a country doctor, socially, morally, and mentally. Besides attending to a large medical practice, he delivered 3254 cases of labor, performed 2000 surgical operations, and exsected 80 ovarian tumors in his sixty-four years of practice. In the year in which he became eighty-four years old he attended 5 obstetrical cases; and performed 7 ovariectomies, of which he lost the last one, through the careless act of a country doctor who assisted him. He had

twelve sponges in use; the assistant cut one in two without his knowing it and handed him a half, which he left in the abdominal cavity, as the count still showed twelve sponges. The patient, the only one of the seven, died of tetanus, and the sponge was found on autopsy. Dr. Atlee would no longer perform this character of exsection. His last surgical work was a tracheotomy, performed three weeks before his death, and when within two months of the age of eighty-six. He continued his professional labors until attacked by pneumonia from exposure to cold and dampness, and then died in three days.

Dr. Ehler, the only surviving witness of Dr. J. L. Atlee's first ovarian exsection, wrote to this effect, on September 1, 1893. Dr. Atlee being asked the day before the operation in regard to its risks and responsibilities, in view of the prevalent opinions current among medical men, said: "*I know every step in the operation, and I intend to perform it, hoping and believing in ultimate success, fearing no man's sayings or doings.*" The patient's preparation for enduring the operation was the administration of two tablespoonfuls of brandy and 20 drops of McMunn's elixir of opium (tinct. opii deodorata), of the same strength as laudanum. This may have given a little alcoholic courage to the lady, but was only a *placebo* in its antagonism to pain. It is difficult now to determine, which exhibited the greater degree of boldness, the operator or the subject. Before the days of anæsthetics, it was determined that the most painful steps in surgery were the cutting of the skin and nerves; and the long incision in the abdomen felt like the burning of a white-hot wire. In evidence, notice how soon a woman will double herself up, if you begin an abdominal section before she is fully under an anæsthetic sleep.

We are glad of this opportunity to pay a merited posthumous honor to a worthy medical practitioner who was satisfied to accomplish great good in saving life and relieving suffering in the region where he was born. The well-known name of "Atlee" has so generally been associated with that of his younger brother Washington, the specialist in ovarian exsection, who removed 387 ovarian tumors during his shorter life, that we are glad to make it known that there was another distinguished physician of the same name and family, not so widely celebrated, but much beloved and esteemed by those who were associated with him.

The patient says of herself, that when she had decided to submit to the operation, the whole town could not have persuaded her to change her determination, as she had unlimited confidence in Dr. Atlee. The day chosen for the operation proved to be a very warm one; she took a bath in preparation; a cup of coffee only for breakfast; and declined to be placed under the effects of ether. The operation was commenced soon after eleven o'clock A.M., and lasted forty-five minutes. As she

was alive to every sensation, she particularly refers to the process of breaking up the adhesions of the right tumor, which she says were five, and the separation of which caused an indescribable measure of suffering.

In her after-treatment, she says that she had a doctor, or a student of medicine with her, night and day for several days, and thinks they felt her pulse every half-hour. She remembers being permitted to walk once across her room at the completion of two weeks; and taking a ride of two miles, a week later. She expressed to me in writing, a loving gratitude to Dr. Atlee for his faithful care and attention as her physician, and for his skill as the instrument in restoring her to perfect health. She has led a busy life for half a century, and is described as still "active and sprightly."

329 South Twelfth St., Philadelphia,
November 14, 1893.

A CONTRIBUTION TO OUR KNOWLEDGE OF EPIDEMIC CEREBRO-SPINAL MENINGITIS.

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(Concluded from page 172.)

SYMPTOMATOLOGY.

Regarding the symptomatology, we shall content ourselves with giving a very brief *rêsume* of the notes taken, paying most attention to the symptoms most prominent in this epidemic. We shall lay especial stress upon certain of the clinical features (*e. g.*, the blood examination) which heretofore have been insufficiently studied. The peculiar conditions which obtain in an infectious intra-cranial disease are such as to render the clinical picture very complex. In local infections elsewhere in the body (*e. g.*, pneumonia, diphtheria) it is comparatively easy to separate clinically the symptoms and physical signs due to the local action of the infectious agent on the one hand from those dependent for their origin on the absorption and distant action of its toxic products. In diseases within the skull, however, more than anywhere else in the body, it is the size of the pathological new production and the quickness of its development which are of significance for the severity and course of the disease. Quincke has recently again emphasized the fact that even the simple serous accumulations within the skull-cavity, no matter where

they are situated, if sufficiently extensive, may produce the most severe symptoms, or even cause death.

In epidemic cerebro-spinal meningitis we have to think of the results which may follow, not only the more or less sudden outpouring of an exudate (cortical, basal, or intra-ventricular), but also those which are consequent upon the direct and remote action of the toxines which are produced by the micro-organisms, and we have to decide whether the lesions in distant organs (lungs, heart, joints) are to be looked upon as absorption-effects or as a localization of the same organism in these parts, or as complicating infections due to other bacteria. As Leyden has pointed out, the gravity lies more often in the evil effects of the exudation on the functions of the brain than in the severity of the infection; if the meningitis be cortical, epileptiform convulsions endanger life; if there be marked exudation into the ventricles, then coma and brain paralysis too often ensue.

From what we have said, and from the results of pathological examinations, the complexity of the question becomes easily evident, and an attempt to analyze the different disturbances in function, and to connect each definitely with its pathological basis would seem at first to be well nigh hopeless. Nevertheless, with the constant acquisition of facts and better methods of technique, we need not despair of finally arriving at a position in which we shall be able to cope more or less successfully with these problems.

It was possible at Lonaconing to make out most of the different types of the affection which have been described—fulminating, acute, subacute, intermittent, and abortive. The onset of the disease was, in the majority of the cases, sudden, the individual being attacked without warning with severe headache and vomiting, symptoms which were often followed in a few hours by delirium, stiffness and retraction of the neck, and severe constitutional disturbances. In only a few cases was there a definite recognizable prodromal stage, with general malaise, headache, and dragging pains in the limbs.

Compared with other epidemics, the number of fulminating cases (*cas foudroyants*) was large, no less than ten patients dying within forty eight hours after seizure, one child indeed succumbing in eight and another in ten hours after the appearance of the first symptoms. In the less violent but still severe cases the symptoms lasted from six to fourteen days, when either death occurred or signs of slow improvement ensued. Many abortive cases were observed in which, after a sudden onset, with perhaps severe symptoms, the patients recovered with striking rapidity.

Several cases of the "intermittent type" occurred during this epidemic, and in these periods of comparative well-being alternated with marked exacerbations. The convalescence was often tedious, and the danger was by no means over when the acute symptoms had subsided.

Even after there was good reason to believe that the causative bacteria were all dead and convalescence seemed to be established, serious symptoms would reappear, which would suggest that as long as the exudate is not completely reabsorbed there is danger.

The symptoms in general, we may say, presented no regularity. The disease is full of surprises, and the clinical phenomena of one day or hour may differ greatly from those of the next.

Especially inconstant was the course of the fever, and the temperature charts are interesting, chiefly in that they show that no fixed type of pyrexia can be definitely assigned to this disease. Nor did the height of the fever bear any relation to the severity of the other symptoms; the sudden and often marked elevations and depressions of the temperature independent of general symptoms could be explained only by assuming a direct interference with the functions of the thermo-regulatory centres. Even the absence of pyrexia did not permit the making of a favorable prognosis.

The other symptoms referable to disturbances of the central nervous system, the headache, the vertigo, the delirium, the paralysis of the eye-muscles, the deafness, the general hyperæsthesia, and the twitchings showed almost as great irregularity as did the temperature curve.

Among the clinical appearances noted which were due to lesions of the cranial nerves and their centres in the different cases may be mentioned anosmia, strabismus (almost always divergent), nystagmus (usually horizontal or vertical), inequality of pupils, photophobia, ptosis, defects of vision, facial rigidity, trismus, slowed respiration, Cheyne-Stokes breathing, deafness and disturbances of speech.

On account of its rarity, it is interesting to record one case in which we observed definite rotary nystagmus. The patient was a girl of seventeen, who had severe general symptoms with distinct evidence of a basal exudate. During a part of one day the left eyeball was rotated definitely in its socket, the excursions apparently corresponding to the limits of the movements of rotation. On reviewing the literature, we have been able to find reference to only one similar instance—a case mentioned by Jaffé.

The intra ocular changes have been especially studied in this epidemic by Dr. R. L. Randolph. Out of thirty-five cases in which he examined the fundus, it was normal only in seven. The most frequent alteration was passive congestion in the retinal veins, with congestion of the optic disks. In several cases there was a distinct optic neuritis, and in one instance the central vein was thrombosed.

The retraction of the neck was very commonly present; in some cases the occiput was drawn well back between the scapulæ. The thighs and legs were frequently flexed, but extreme opisthotonos was not often seen. There was general hyperæsthesia of the skin, and attempts to change the

position of a patient gave rise to severe pain. In the graver cases there were marked twitchings of the muscles and tendons, and in some, especially a short time before death, convulsions and coma.

The tendon reflexes varied much, but in many cases were diminished, which is to be attributed, no doubt, to the extent of the interference with the posterior roots of the spinal nerves.

Beyond the nervous arythmia, the respiratory organs were not markedly implicated, and it was only rarely that one met with an associated bronchitis or broncho-pneumonia. General cyanosis was not uncommon. A very frequent feature in the epidemic was epistaxis, a symptom which does not seem to have often attracted the attention of observers elsewhere.

The pulse was sometimes slowed, sometimes accelerated, and often intermittent. Beyond the blowing systolic murmurs so frequently heard over the cardiac area in children in febrile affections, there were very few symptoms referable to the heart or pericardium.

The lips, teeth, and tongue were covered with sordes, especially in the graver and more protracted cases. A few patients showed mild anginas, and the tonsillar crypts were not infrequently filled with white cheesy-looking plugs. The chief symptom pertaining to the digestive system was the vomiting, which, in some cases, was persistent and imtractable, leading to inanition and emaciation. Where the retraction of the neck was great there was often difficulty in swallowing; in some cases the dysphagia appeared to be due to interference with the normal innervation. The bowels were, as a rule, constipated, although diarrhœa occasionally occurred. Indeed, in four cases a well-marked dysentery was observed, the feces containing mucus, pus, and blood. Occasionally in a grave case there would be incontinence both of the urine and the feces.

In one case of dysentery the feces were carefully examined. The reaction was found to be alkaline, the odor very foul, and mucus, pus, and blood were visible to the naked eye. A fresh specimen of the mucopurulent portion, examined microscopically, showed, besides the epithelium from the surface of the mucous membrane, many round cells of variable size, which were often fatty and vacuolated. Some of these were certainly polynuclear leucocytes, others resembled rather lymphoid cells. In the protoplasm of several cells which had the size of polynuclear leucocytes, besides large vacuoles, one could make out single included cells of small size. Red blood-corpuscles were also present. Smear cover-glass preparations, dried and stained in various ways, showed as the predominating organism lancet-shaped cocci in pairs, apparently encapsulated. In addition, there were slender bacilli, a few shorter, thicker bacilli (resembling B. coli communis), and short chains of streptococci. It must be mentioned that in the two cases which came

to auptosy large lumbricoid worms were found in the alimentary canal, and, on inquiry, we learned that they had been observed in many of the cases, both in the vomit and in the feces.

The spleen was at times slightly enlarged, as shown by percussion; the splenic dulness, however, did not pass beyond the costo-articular line, and in no instance was the border of this organ palpated. Abdominal retraction was not a prominent symptom on the whole. The only symptom referable to the liver was the occurrence of mild jaundice in two of the cases.

The cutaneous changes were widely divergent. Many of the cases ran their course without any apparent exanthem, and if one were to be guided only by the majority of cases in this epidemic he would be compelled to discard the name "spotted fever" for the disease. Herpes was very common, and formed an early and important symptom. It was situated chiefly on the lips, nose, ears, and neck following the distribution of the cutaneous vessels and nerves. Purpuric and petechial eruptions were seen in a comparatively small proportion of the patients; one of the commonest forms of eruptions was an indistinct purplish mottling over the surface of the body, which appeared and disappeared almost under the eyes.

The urine varied in amount in different cases and in different stages of the disease. As a rule it was concentrated, but occasionally a patient would pass large quantities having a low specific gravity. In the severer cases, and especially in those running an acute course with high fever, slight albuminuria was common, and microscopical examination of the sediment showed the presence of hyaline and granular casts. Erhlich's diazo-reaction was negative in every case in which it was applied. The reaction has, however, been present in the urine in a few instances in meningitis, but only according to Ehrlich in very severe cases. The urine contained an excess of phosphates, a point to which several observers, notably v. Grimm, have called attention. In many cases there was a white precipitate of triple phosphates equal to one third or more of the volume of urine passed. In none of the specimens examined could the presence of sugar be demonstrated.

The Joints.—Nearly twenty per cent. of the severe cases suffered from complicating joint affections, the knees being most frequently attacked, the elbows, wrist, and ankle following in frequency in the order named. The effusions were peri-articular as well as intra-articular, and the joints were swollen and reddened, resembling closely those of acute articular rheumatism. Indeed, there were cases which, had it not been for certain initial symptoms indicating a meningeal process, could easily have been diagnosed as nothing more than attacks of rheumatism. Similar cases have been noted in other epidemics, and there are references in the literature which draw attention to the prevalence

of meningitis and of rheumatism in the same community at the same time.[1]

Speaking generally, it may be said that for this epidemic at least, complications in the joints occurred more frequently in the better class of patients, and it is interesting to note that the meningeal symptoms appeared to be favorably influenced by their appearance.

Kernig, of St. Petersburg, has described a symptom which he believes to be pathognomonic of meningitis. In thirteen cases he observed a peculiar flexion contracture (*Beuge-kontraktur*) of the knee-joints which could not be reduced when the patient was in the sitting position. In attempting to extend the knee, the leg could not be straightened further than a point where it made an angle of about 135° with the thigh, although when lying or standing this contracture was completely absent. If the patient lay on his side with the thighs drawn up the symptom was still present. It has been claimed that the same phenomena may be seen in many other conditions (old age, chronic alcoholism, etc.), but Kernig asserts that he has examined thousands of individuals with particular reference to this point, and has never found this contracture except in cases of meningitis. Unfortunately we were not familiar with this suggestion when at Lonaconing, and so cannot say anything as to the value of "Kernig's symptom."

THE CONDITION OF THE BLOOD.—There have been very few opportunities for studying the blood in cases of epidemic cerebro-spinal meningitis since the more general employment of the finer methods of hæmatological technique; and in the literature we have been able to find only meagre references to the subject by Halla, v. Limbeck, and Rieder. The two former found a leucocytosis in cases of suppurative meningitis, while Rieder observed two cases of epidemic cerebro-spinal meningitis, one having 20,100 white corpuscles, the other 17,500 to the cubic millimetre. We were fortunately able to examine the blood of

[1] These facts are, we think, not without importance as bearing upon the etiology of acute rheumatism. There can be little doubt, it seems to us, although for the proof we must look to cultural experiments, that in the joint complications in epidemic meningitis, the articular and the peri-articular inflammations are due to local infections with the same bacterium which has set up the meningitis. Moreover, in at least one case of genuine acute rheumatism the micrococcus lanceolatus has been isolated in pure culture from the joint effusion, and Fòa and Bordoni-Uffreduzzi have been able to set up a polyarthritis in rabbits by subcutaneous inoculation of this diplococcus. The frequent association of rheumatism with endocarditis, and with inflammation of the pleura, pericardium, and peritoneum lend support to the view that at any rate in a certain proportion of the cases the pneumococcus may be the cause. Nevertheless it is probable that acute articular rheumatism will, ere long, be proven to have no *etiological unity*, just as has already been proven for the inflammations of the serous membranes generally. It seems probable that the entrance of pyogenic organisms of different varieties into the circulation, under circumstances which are inconsistent with the development of the phenomena of a general septicæmia, may give rise to inflammations in some one or more of the serous membranes of the body—be it meninges, pleuræ, pericardium, peritoneum, or joint surface, the particular ones attacked depending on certain peculiarities either in the virulence of the invading organism or in the lessened resistance at the moment of the serous membrane implicated.

several of the cases at Lonaconing, but shall include in this report only a few typical examples.

In order to avoid error, every precaution was taken in these examinations. The blood in all cases was taken with the aid of a sterile lancet from the lobule of the ear, previously thoroughly cleansed with alcohol and ether. The blood was examined fresh in each case, care being taken to secure specimens which spread out into a layer of only one corpuscle in thickness. These were examined immediately with an oil immersion lens. The hæmoglobin was estimated by the instrument of v. Fleischl. The readings were made in a dark room, with artificial light, and through a cylinder of paper some twelve inches in length. Moreover, the readings were made by two individuals, and where the results differed at all the mean of the readings was recorded. By this method of control any gross error was avoided. For the enumeration of the corpuscles the blood-counter of Thoma-Zeiss was employed, the methyl-violet solution of Toison being used as a diluting fluid. Finally cover-slips were prepared for drying and staining by the methods of Ehrlich. For this purpose particular care was taken to secure good specimens, and on subsequent examination all imperfect preparations were discarded. We shall epitomize the results of our examinations. In the fresh blood slide no marked variations in size or shape of the red corpuscles could be made out; in some of the cases, however, there was distinct pallor of the red cells. The increase in the number of the leucocytes was quite evident in many cases in the examination of the fresh drop of blood, and a greater number of white corpuscles appeared to be motile than one sees under normal conditions. Many of the leucocytes presented a striking vacuolation, a condition which, we believe, is not uncommon in the leucocytes dependent on other causes. The blood-platelets were present in clumps, but did not appear to be decidedly increased or diminished in numbers.

As to the number of corpuscles present, the average of a number of counts shows that a diminution of the red cells is not a marked feature of the disease. In some of the advanced cases, with emaciation there was a moderate oligocythæmia, but in the majority of instances the full complement of red blood-corpuscles was present. The hæmoglobin, however, in all cases examined was somewhat diminished in amount, so that the individual corpuscular holding in hæmoglobin (*valeur globulaire*) was below par. A well-marked leucocytosis is, we believe, a constant phenomenon in the disease during its active stages. In no case examined, except in convalescent patients, was it absent. The number of white corpuscles varied in different cases in our experience, between 12,000 and 32,000 to the cubic millimetre. That the degree of variance is greater, however, there can be little doubt, and it is probable that further investigations will prove that still larger leucocytoses may exist, especially in cases of meningitis associated with complications in the lungs or joints. The dried specimens were fixed by heating for an hour and a half on a copper bar at 120° C., and then stained, some of them in solutions of eosin and methylene-blue, some in the triple stain of methylene-green, acid fuchsin and orange green.

In none of these specimens were micro-organisms found, although they were patiently looked for. The "color analysis" of the leucocytes

showed in every case the increased number of white blood-corpuscles to be due to an increase in the cells with neutrophilic granules and polymorphous nuclei. The mononuclear cells (small and large) were relatively diminished in number. It will be seen that these changes in the blood are not peculiar to meningitis, but are quite in accord with the leucocytoses associated with suppurative inflammations, or inflammations accompanied by well-marked local exudation anywhere in the body.

As examples the following four cases may be cited:

Bessie B. (Case XVII. of Dr. Porter's series), aged four years, always healthy before; had been a bright, stout, well-nourished girl. One evening in the last week in January felt cold and chilly, and had distinct rigor during the night, followed by vomiting and severe pain in the head. During first week she was very restless, had muscular hyperæsthesia, inequality of pupils, rapid pulse, and uttered a sharp cry from time to time. Two purpuric spots appeared on buttocks. Retraction of the neck began about the eighth day. Up to this time the patient ate and drank well, and appeared rational. The mother now noted that the child could not use the right arm, and on examination it was found rigid and swollen. Herpetic eruption appeared about the tenth day.

Note dictated February 14: Child lies on left side, moderately emaciated, legs drawn up, thighs flexed, right arm rigid, resists movement; head retracted; whole body held stiff and rigid; attempts to move the child cause her to cry out; face slightly mottled and has a bluish tint; lips bluish-red and covered with sordes; remains of herpetiform eruption visible. Tongue grayish-yellow, moist coating thicker in the centre than at the edges; pupils even, midway between contraction and dilatation. No ocular paralyses; veins in forehead rather prominent; thorax symmetrical; expansion equal; marked pulsation in vessels of neck; resonance clear throughout front, axillæ, and back; a few whistling rhonchi heard at bases. Pulse equal at the two wrists, 18 to the quarter, very irregular and arrhythmical. Sometimes there would be two or three beats of varying intensity followed by a pause corresponding to the time of from two to four beats; volume of pulse rather small. Apex beat of heart in fourth interspace 1 cm. inside the left nipple line. Dulness not increased; loud blowing systolic murmur heard over whole cardiac area, greatest intensity at the third left interspace 1 cm. from sternal margin. Pulmonic second sound relatively accentuated. Splenic dulness begins at the eighth rib and extends to the costal margin; does not pass the costo-articular line. Border not palpable, possibly owing to rigidity of abdomen. Liver dulness begins at the seventh rib in right mamillary line and extends to costal margin; border not palpable. Skin dry, no œdema; no marked change in tendon reflexes; no lymphatic enlargement.

The blood examination was made on February 14. Even in the fresh drop of blood the increase in the white elements could easily be made out. The count showed 4,448,000 red and 24,000 white blood-corpuscles; hæmoglobin, 72 per cent. Dried and stained preparations showed a marked increase in the number of polynuclear leucocytes with ε-granules, and a relative diminution in the number of lymphocytes and large mononuclear leucocytes.

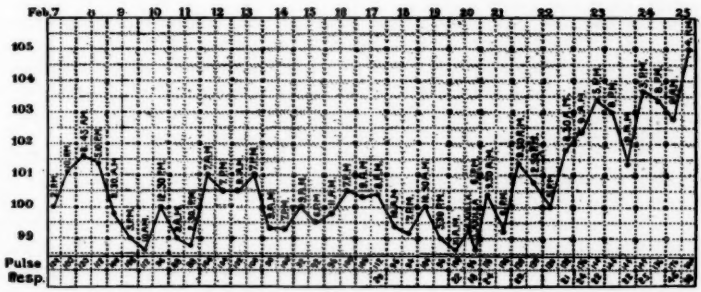
Florence D., aged sixteen years. The onset in this case had been gradual, the patient having pain in the head and back for several days before any serious symptoms appeared. On January 29, at 1 P.M., she had a severe chill followed by excruciating pain in the head, causing loud shrieks and restlessness; this was associated with vomiting and excitement. Next day

the patient was decidedly deaf and more or less stupid. Later she became delirious, and often had to be held in bed. She picked her nose from time to time and had several attacks of epistaxis. Distinct purpuric eruption appeared on face and neck and a few spots on body. None of them were very bright and none of them turned yellow or green afterward. During part of her illness she had retention of urine and had to be catheterized. Her bowels were constipated. Spleen and liver not distinctly enlarged. The temperature never went higher than 103.5°. She had marked eye symptoms, including divergent squint, paralysis of accommodation, and nystagmus. On ophthalmoscopic examination there was a definite optic neuritis in the right eye (Dr. Randolph). The girl died at the end of the third week of the disease. Toward the end she was much cyanosed and showed well-marked Cheyne-Stokes respiration. Her urine was examined several times and found to contain a trace of albumin and numerous hyaline and granular casts.

The blood was examined on two successive days in the third week. As the results of the two examinations were practically the same, we give that made on February 15. In the fresh blood slide, the examination of two or three fields sufficed to show that the leucocytes were distinctly increased in number. The vacuolation of the leucocytes was especially striking in this case. Hæmoglobin (v. Fleischl), 45 per cent. Blood-count: red blood-corpuscles, 4,896,000; white blood corpuscles, 24,500. The dried and stained specimens showed a marked relative increase (over 85 per cent.) in the neutrophiles with polymorphous nuclei, and a relative decrease in the different mononuclear forms. Several typical normoblasts seen.

Agnes S., aged nine years, taken ill on February 7, 1893. Complaining of chill, severe pain in the head, and vomiting. The temperature, as will

FIG. 4.



be seen by referring to the accompanying chart, was not high at the beginning. There was severe pain in the neck and inability to move muscles of limbs on account of pain. No marked retraction of neck. She continued with comparatively mild symptoms for some ten days when, on February 17, she had diarrhœa, cramp-like pains in the abdomen, with a little blood and mucus in the stools. These symptoms were relieved the next day, but on the 18th she suffered from extreme pain in left ear, requiring morphine for its relief. On the 20th it was noticed that she had no power in right arm and leg, and there was some incontinence of urine and feces. Paralysis of right side of face. On 23d temperature rose to 101.8°. Next day well-marked evidence of complicating bronchitis and broncho-pneumonia.

Pulse and respiration became more rapid and temperature higher. Death on evening of February 25. Temperature, 105°; pulse estimated at over 200.

The blood examination in this case was made on February 14th. In the fresh blood slide the increase in the white elements was easily demonstrable. Marked vacuolation of the leucocytes. Hæmoglobin (von Fleischl) 72 per cent. Blood-count, red blood-corpuscles 5,032,000; white corpuscles 29,500. Cover-glass preparations from this case dried and stained in the "triple stain," gave the following "differential count" of white elements:

			Proportions in normal blood.
		Per cent.	Per cent.
Small mononuclear	53	4.9	15 to 25
Large mononuclear and transition forms	74	6.8	4 to 6
Neutrophiles with polymorphous nuclei	946	87.3	70 to 75
Eosinophiles	0	0.0	1 to 5
Myelocytes	10	1.0	
Total number counted	1093	100.0	

Only one nucleated red blood-corpuscle (typical normoblast) seen in the whole slide.

In making the differential counts it was thought best to adopt the simple classification given above rather than the more complicated one of Uskow. According to the suggestion of Thayer, we have made the counts so that the small mononuclear elements correspond to the small and large lymphocytes, the small transparent forms and some of the smaller transitional forms of Uskow; the large mononuclear and transition forms including all other non-granulated forms, with the exception of transparent polynucleur leucocytes. In terms of Uskow's classification the characteristic change in these leucocytoses consists of an increase in the *ripe*, and especially in the *over-ripe* elements with a relative decrease in the number of the *young* or *unripe* elements.

The complete absence of leucocytes with eosinophilic granules did not hold for the other cases examined. The number of typical myelocytes seen in this case was rather striking, and, had the patient been an adult, would perhaps have been of considerable pathological significance. In the blood of children, however, one often sees, even under normal conditions, a variable number (nearly always, however, under 1 per cent.) of these cells.

For comparison, we give the results of a differential color analysis of the blood taken from a woman, thirty-eight years of age, who had suffered from a prolonged attack of meningitis, and had a moderate leucocytosis:

	Per cent.
Small mononuclear elements	10.9
Large mononuclear and transition forms	2.1
Eosinophiles	0.6
Neutrophiles with polymorphons nuclei	86.4
Myelocytes	0.0
	100.0

Lizzie L., aged fifteen years (service of Dr. Skilling), was seen during convalescence. She had suffered from a severe attack, the temperature at the beginning reaching nearly 105°. There had been retraction of the neck and delirium for some four or five days, and excessive vomiting. Abundant

herpatic eruption on lips, cheeks, hands, and wrists, the discoloration still remained. Marked constipation at first. No paralysis, no joint complications, no tenderness below neck. Had been sitting up the day before blood examination was made.

In the fresh blood-slide the red corpuscles were noticed to be distinctly paler than normal. No apparent increase in number of white elements. Hæmoglobin 55 per cent. Red blood-corpuscles, 5,004,000. White blood corpuscles, 9000. In the dried and stained specimens the different varieties of leucocytes were present in about normal proportions, the over-ripe (multinuclear) elements being still, however, slightly in excess. A few typical normoblasts seen. This count is given in that it shows the disappearance of the leucocytosis with the advent of convalescence.

TABLE.

Patient.	Age.	Attending physician.	Day of disease.	Temperature at time of examination.	Hæmoglobin (v. Fleischl).	Red blood-corpuscles to c.mm.	Valeur globulaire.	White blood-corpuscles to c.mm.	W. R.	Remarks.
					p. ct.					
B. B.	4	Dr. Porter	17th	...	74	4,448,000	0.84	24,000	1 : 185	Dysentery as a complication.
F. D.	16	Dr. Porter	18th	101.2°	45	4,896,000	0.47	24,500	1 : 199	Albumin and casts in urine.
A. S.	9	Dr. Porter	7th	100.5	72	5,032,000	0.7	29,500	1 : 170	
L. L.	15	Dr. Skilling	...	99.2	55	5,004,000	0.55	9,000	1 : 556	Convalescent.

A word of explanation is necessary with regard to the low percentage of hæmoglobin found in the blood of Florence D. and Lizzie L. Both these girls showed clinically a decided pallor of the skin and mucous membranes, although as the blood-counts show the red corpuscles were present in nearly normal numbers. The marked diminution in the *valeur globulaire*, taken with the age and sex of the patients, made us think of a pre-existing chlorosis, and on inquiry we learned that both had been noticed to be slightly pale for some months previous, and that both had complained of more or less constipation and certain menstrual irregularities. It is almost certain, therefore, that the low percentage of hæmoglobin observed in these two cases was not entirely dependent upon the meningeal inflammation.

And finally, in this connection, it will not be out of place, in view of the many interesting observations which have been made regarding the bearing of the presence or absence of a leucocytosis in diseases due to the lanceolate diplococci (acute lobar pneumonia, pneumococcus-infections in rabbits) upon the severity of a given infection and upon the prognosis, to state that, in the fatal cases which we have had the opportunity of examining during life the presence of a leucocytosis was always demonstrable. While for confirmation of this point it will be necessary to study many more cases in future epidemics, yet the evidence, as far as it goes, is in favor of the view which we have already mentioned, that death

in cerebro-spinal meningitis results from the local intra-cranial mischief, rather than from the infection *per se*.

The death-rate at Lonaconing corresponded to that of an epidemic of moderate severity, about 40 per cent. of the cases (excluding those classed as abortive) proving fatal. Hirsch, in his monograph, states that out of 15,632 cases 37 per cent. died. v. Ziemssen placed the mortality of mild epidemics at 20 per cent., and of the severest epidemics at 70 per cent.

PATHOGENESIS.

The disease, then, being known to be due, at least in the majority of instances, to the action of a specific micro-organism, viz., the micrococcus lanceolatus, we have next to consider by what mode the infectious agent gains entrance to the body, and more particularly into the meninges of the brain and cord, and in what way, if at all, it is thrown off. Again we have to inquire whether, if it can be thrown off, it will ever then be in a condition to infect other individuals.

Unfortunately a wholly satisfactory answer cannot at this time be given to these questions. We are not yet in possession of sufficient data based on a close study of the epidemiology and bacteriology of the disease, to enable us to more than indicate the probable mode of infection and the conditions which predispose to the origin and propagation of the disease.

The simultaneous prevalence of other infectious diseases in the localities in which epidemic cerebro-spinal meningitis existed, has been held to be of some significance. The occurrence of pneumonia at such times must be regarded as of special importance, for, as we have said, the same infectious agent is the cause of both diseases, and in the epidemic of cerebro-spinal meningitis studied by Foà and Bordoni-Uffreduzzi the most of the cases were complicated by pneumonia. Epidemic parotitis has been noted as occurring in a community in connection with or just before the outbreak of this disease. Parotitis was epidemic at Lonaconing at the time of the prevalence of meningitis, and we may remark that there are in the literature references which go to show that the micrococcus lanceolatus may be the cause of this disease also.

Again, other infectious diseases, scarlet fever, measles, typhoid fever, influenza, and coryza, have been mentioned by different writers as concomitant epidemics.

While in pneumonia, and probably a certain number of cases of parotitis and coryza, the same organism as that found in meningitis is known to occur, yet in the other infectious diseases mentioned, the infectious agent, so far at least as is known at present, is in none of them the micrococcus lanceolatus. Moreover, it is to be remembered that meningitis does not attack by preference those suffering or just recovering from other infectious diseases, if we exclude pneumonia. These diseases occur as concomitants or as precursors only.

Hence it is clear that in the search for predisposing factors we must look further than the infectious diseases with which epidemic meningitis may coexist. And it is not improbable that we shall find that, although one disease does not depend upon the other for its development, yet the same conditions of life which permit one to flourish may also engender the other.

It has been suggested by Strümpell that there may be some relation between coryza and epidemic meningitis. This, he thinks probable, on account of the observations of Weigert, that in some cases of the disease there is a purulent inflammation of the nasal sinuses. Weichselbaum found in some of his cases of meningitis purulent inflammation of the nasal and sphenoidal sinuses and the middle ear, and in all these he demonstrated diplococci. One must, we think, hesitate before accepting it as even highly probable that the majority of cases originate in this way. On the other hand, a sharp line of distinction must be drawn between those cases which are definitely primary and those which are secondary. There are, undoubtedly, cases in which there has been an extension of disease in the middle ear to the meninges, and why should not the same thing happen in diseases of the nasal sinuses? Such cases may simulate the sporadic form of the disease. But what is necessary is to see whether or not cases associated with diseases of the middle ear and those of the nasal mucous membrane occur in such numbers during an epidemic as to make this mode of origin the probable one in all. In the acute case in which we performed an autopsy no disease of the nasal sinuses existed.

With our present knowledge it seems more probable that we have to do with an infection by the way of the blood current rather than by continuity from the nose or ear. The common occurrence of meningitis in pneumonia indicates the possibility as well as the frequency of this mode of infection. In those cases in which pneumonia does not occur, other sources of entrance for the infectious agent must be sought; and to this category belongs especially the epidemic form. In any consideration of this subject at the present time, infection from the nasal[1] and oral cavities, in the latter case by lymphatic communication, as suggested by Ortmann, is a possibility which cannot safely be rejected. Nevertheless, the writers have been led to believe that the intestinal tract may be regarded as the way of entrance into the blood-current, if not in all, at least in many of the cases.

In two of the cases which we observed clinically, and which afterward proved fatal, there was dysentery. Cultures and cover-slip preparations were made from the evacuations of one of these, and the predominating

[1] The lymphatics of the mucous membrane of the nose can be injected from the subarachnoidal lymph space (Schwalbe, Key, and Retzius.)

organism present was the micrococcus lanceolatus. In both of the cases which came to autopsy there was enteritis. And in other epidemics the occurrence of dysentery has been noted. Yet constipation as a feature of the disease is of more common occurrence than diarrhœa. This may be considered at first as militating against the conception of the intestinal tract as the place of entrance into the body of the infectious agent. But it is perfectly conceivable that the organisms may enter through the intestinal canal without first producing a demonstrable lesion therein, and find in the meninges of the central nervous system a *locus minoris resistentiæ*. The case of meningitis, as reported by Ortmann as due to the micrococcus lanceolatus secondary to typhoid fever is important as indicating the possibility of entrance from the intestine. Here, however, undoubted lesions of the mucous membrane were present.

Owing to the slight vitality of the organism in acid media, and as the intestine must become invaded after the infectious material has first passed through the stomach, it is necessary to draw attention to one point that may be of significance. Whether in all the persons attacked there is an alteration in the gastric juice by which its acidity is either diminished or altogether abolished, we cannot say, as we were unable to obtain the contents of the stomach from a number of cases. But in the vomit obtained from one child sick of the disease, free hydrochloric acid was demonstrated to be absent. Still, were this not the rule, there are periods in health during the fasting hours, when the stomach is free, or nearly so, from acid contents. In this connection the observations of Ewald are full of interest. He found that when water was introduced into the stomach a small amount passed immediately into the intestine; after about an hour the rest went suddenly over into the duodenum, and this part had no acid reaction, so that any bacteria present were not subjected to the harmful influence of an acid medium. Flügge has recently emphasized this point when dealing with the method of spread of cholera through drinking-water. In our disease the diplococci are of course not necessarily in the water imbibed, but in the process of swallowing it is easy to understand how they could be washed from the mouth and throat (their constant habitat), and so gain entrance to the stomach, and finally to the intestines uninjured.

The importance of considering the intestine as a probable infection-atrium in epidemic cerebro-spinal meningitis becomes evident when it is remembered that about 80 per cent., and according to some authors (Kruse and Pansini) 100 per cent., of all persons in health carry about constantly in their mouths the micrococus lanceolatus, and according to Netter, in 20 per cent. of these the organisms possess sufficient virulence to kill animals when injected into them. This fact removes the necessity of searching for the infectious agent outside the body, in, for example, the soil or the water.

Most writers on the subject now agree that the disease is not contagious, but is rather of "miasmatic" origin. The localization of the infectious agent in the closed cavity of the central nervous system certainly does not favor the infection of the surroundings. Still in some epidemics, that in Hamburg for example, the disease was known to appear in a locality in which it previously existed, but from which it had disappeared; and the interval of time which had elapsed was in some instances considerable. These facts would seem at first to be irreconcilable with the view that there is no infection of locality. We have shown that an organism possessing the culture and morphological properties of the micrococcus lanceolatus is thrown off with the dejections in some cases of cerebro-spinal meningitis, and as indicated by the experiments of Bordoni-Uffreduzzi, Guarnieri, Netter, Patella, Nikiforoff, Sirena, and Alessi, and Kruse and Pansini, the organisms may retain their vitality and even virulence when dried in sputum, blood, etc., sometimes for four months. Hence we are not at this time justified in excluding the possibility of the infection of locality. This assumption seems, however, in view of the wide distribution of the organism in nature, to be hardly necessary. It is, we think, more probable, that the local conditions which enabled the first cases to appear, persisting, other susceptible individuals are attacked, so that fresh cases appear in the site of the previous ones, in fact that we have to do with a "predisposition of community" rather than an "infection of locality."

If we are then to believe that the disease is, in the majority of instances, the result of an auto-infection, and this would be equally true whether we conceive it to be due to the entrance of the bacteria from the nose or pharynx or from the intestinal canal, it still remains for us to determine the nature of the unusual conditions which render the system vulnerable to the invasion of the micro-organism, and what it is that brings about the localization by preference of the morbid process in the cerebro-spinal meninges.

When excluding air, water, soil and food, as carriers of the infectious agent, we by no means intend to deny that they may play an important rôle in the causation of the disease. And concerning Lonaconing, the local conditions are such as would naturally produce a lessening of the powers of resistance of a number of individuals, and thus render them, although apparently in good health, susceptible to the disease. While in this epidemic, as we have already said, the more prosperous classes were by no means exempt, it was chiefly the poor that suffered, and the disease prevailed particularly in localities in which the houses were close together, and in which overcrowding existed, with the attendant evils of unsanitary arrangements, improper and insufficient food, and unclean bedding and clothing.

Nevertheless, although the facts pointed to a predisposition of the

whole community outside the merely personal predisposition, in the end the resistance of the tissues of each individual must necessarily be of prime importance in determining infection or immunity.

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THE TIMES AND MODES OF THE INTRODUCTION OF THE EXOTIC DISEASES OF CHILDREN INTO AMERICA.[1]

By J. Lewis Smith, M.D.

The tribes of American Indians occupying North and South America, left to themselves, have never, so far as I am aware, made any important or effective effort to improve their condition. When the Europeans discovered America the chief endeavor of the Indian was to obtain shelter from the weather by rudely constructed huts, to appease hunger by vegetables of spontaneous growth, or by the products of hunting and fishing, and to repel the encroachments of neighboring warlike tribes by implements scarcely better than those of the stone age. Their diseases were chiefly such as are due to climactic influences, such as pertain to the normal growth and decay of the body and to the disturbance of its functions.

The medical literature of America, at least that of North America and in the English tongue, was very meagre during the two centuries succeeding the discovery of America. But there is, I think, sufficient historical evidence that the highly contagious and fatal diseases of infancy and childhood, which to a great degree check the increase of population in both hemispheres, were unknown to the American Indian until communicated by the European.

First we will consider those two loathsome diseases[2] of a vicious and dissolute life, diseases which now prevail among the profligate in all countries reached by commerce and travel. These two diseases were not differentiated from each other until long after the discovery of America. Though described in text-books as diseases of adults, they not infrequently affect children in one way or another. Inherited syphilis is likely to be fatal in infancy unless properly treated, and in those who survive it is a common cause of scrofula or deterioration of

[1] Address at the opening of the Pædiatric Section of the Pan-American Medical Congress.

[2] Syphilis and gonorrhœa.

constitution. The Indian, at least in North America possesses, in his normal state, a vigorous constitution and great power of endurance; but broken down by inherited disease and a dissolute mode of life, his system becomes frail, much less capable of endurance, and he is liable to an early death.

The second of the diseases which we are considering, gonorrhœa, is a serious infliction upon a people having no medical profession or science of medicine. It is likely to produce a severe specific conjunctivitis, with subsequent blindness and other ailments in young children, besides deterioration of the system.

Certain it is that the two maladies to which we call attention were not only not differentiated from each other, but had attracted but little attention on the part of the laity and physicians—probably on account of their rarity—until the last quarter of the fifteenth century. In the last decade of the fifteenth century the army of Charles VIII. of France had entered Spain and Italy in the vain attempt to establish a French empire extending from the Baltic to the Mediterranean, and bands of dissolute soldiers, roving through Southern Europe, disseminated the loathsome diseases of which we are treating. In the belief that they were forms of the same disease, they were designated the morbus gallicus in Italy and Spain, which countries suffered severely from the invasion of the French army. This term will, for convenience, be used in this paper to designate syphilis and gonorrhœa before they were differentiated. The morbus gallicus was so frequent in Southern Europe during the stay of the army of Charles in Italy, and especially at the siege of Naples, that it was regarded as an epidemic thought by some to be due to an unfavorable conjunction of the stars. The discovery of the Western hemisphere at this time, and the fact that the sailors and soldiers of Columbus had the morbus gallicus, also gave rise to the absurd and untenable theory that the diseases embraced under this name were communicated by the natives of the West Indies to the European navigators, when the reverse was true.

Francesco Delicado states that the morbus gallicus, with which he was familiar from sad personal experience, prevailed as early as 1448 in Rapallo, and he adds that it was conveyed to America by the men under Columbus (Baumler). He resided several years in Italy. Friedberg wrote in his interesting monograph that certain persons holding high positions in church and State, even those in the quiet of monastic life, presented lesions which we recognize as those of the morbus gallicus, in the decade preceding that of the discovery of America, and he quotes the following passage from the *Annales Danicæ* of 1483, nine years before the discovery of America: "Morbus gallicus sævit christianos." R. Diaz de Isla, in a monograph written about 1510, states that he had treated the morbus gallicus in Barcelona before the

King of France invaded Italy, and also that he had treated the same disease in men from the caravels of Columbus. Did time permit we might quote other extracts from the writers of the fifteenth and sixteenth centuries, showing that the morbus gallicus was an Oriental disease, which gradually exended westward. Was it designed by Providence to expose and check degrading and immoral habits? But the innocent suffered with the guilty. The natives of the West Indies, at first regarding the strange beings who arrived in winged caravels as divine personages, were soon reduced to servitude by the lash and bloodhounds so as to work in the mines and perform other menial tasks, but their worst infliction was the reception of loathsome and fatal diseases, so that their aggregate population soon began to diminish.

Syphilis and gonorrhœa are both highly infectious, and we can easily understand how they were conveyed to continental America by expeditions like that of Cortez. It appears that they extended slowly through the temperate regions of North America, for John Hermann Bass, in his exhaustive treatise on the *American Indian States* (page 588), says that syphilis reached Boston in 1646, and was such a novelty that no one succeeded in curing it until a young physician arrived from the West Indies.

SMALLPOX.—In a treatise written by James Moore, member of the Royal College of Surgeons, published in London in 1815, and dedicated to Edward Jenner, Moore states that he learnt the following facts from the chronicles which have been preserved: The first settlement was made by Columbus upon the island Hispaniola or San Salvador, and he was actuated by humane motives, "but he was surrounded and succeeded when he died in 1506 by a low class of adventurers who were actuated by avarice and fanaticism." It was computed that Hispaniola contained one million of inhabitants when the caravels of Columbus arrived, and Moore ascertained from the chronicles of this period that smallpox was introduced into the island in 1517. It of course spread rapidly, since no mode of prevention was known at this time except isolation, and the Indians had no apartments for quarantine purposes.

The bold endeavor of Cortez to conquer Mexico owed its success to the terror with which the natives were inspired by the introduction of smallpox into their country, rather than to anything accomplished by military art. Children without adequate domiciliary protection and parental care, attacked with smallpox usually die, and if a whole family be attacked, the condition of all is deplorable in the extreme.

In the history of *Ferdinand Cortez and the Conquest of Mexico*, it is stated that in 1518, when this navigator sailed from Cuba upon his expedition to Mexico, smallpox had not reached Cuba and that there was no person infected by this disease in his fleet. But Velasquez, the governor of Cuba, taking offence at the independent action of Cortez,

sent an armament with orders to seize and return him a prisoner. Before the armament sailed the smallpox reached Cuba, and although the Spaniards knew the nature of the disease, a negro having it was allowed to join the expedition. He landed, covered with pustules, among the Indians of Zempoalla, who were entirely ignorant of smallpox or of any method to mitigate its violence.

Dr. Moore says that the smallpox contracted from the negro spread through Mexico with such virulence that in a short time 3,500,000 natives were destroyed in this kingdom alone, and heaps of skeletons of those who perished of this malady were found years afterward in shaded localities where they had been left to die by their friends. It appears from a communication sent by an ecclesiastic connected with the national vaccine establishment, that the ravages by the smallpox in Central and South America were not transient, for in the new kingdom of Leon several warlike Indian tribes were nearly exterminated by this malady, and fifty years previously, heaps of bones, relics of this disease, were found in out-of-the-way places under tufted oaks; even now, according to this writer, so great is the dread of smallpox that if in certain of the tribes an Indian sees a companion stricken with this disease, he leaves him his horse and provisions, and flees to a great distance in the forest.

From the nature of smallpox we can readily understand how it rapidly extends over a wide area, even an entire continent, if not prevented by vaccination. But before the era of vaccination and of personal and domiciliary disinfection it must have been impossible to prevent the propagation of smallpox at any point where infected European navigators landed and came in contact with the natives.

That apostle of civil and religious tolerance, William Penn, a leader of the Society of Friends, or Quakers, sailed from England to the New World on September 1, 1682, with a crew of one hundred followers. When his vessel, the Welcome, reached its destination on the Delaware, two months afterward, it was a pest-house of smallpox, for one-third of those on board had died of this disease. The wide dissemination of smallpox through the temperate regions of North America must have resulted from the arrival of this vessel so strongly infected with the variolous virus.

It is well known that smallpox was early introduced into New England. That remarkable expounder of the Protestant faith and the ablest divine in New England, Cotton Mather, not only combated witchcraft with such vigor and determination that nineteen witches were executed, one of them, Giles Cory, by slow torture, but he also saw the necessity of stubborn resistance to smallpox, which destroyed and disfigured the early settlers of New England. Vaccination was unknown until 1775, when the protective power of the vaccine virus was discovered by the immortal Jenner. But inoculation by the smallpox virus was beginning

to be employed in the time of Mather, since it had been ascertained, though not believed by many of the laity and physicians, that inoculation with its own virus rendered smallpox milder. Mather strongly recommended inoculation at the peril of personal violence, so strong was the objection to it. The statement recently made that Mather, strongly opposed to the religious teachings of Penn, endeavored to intercept him in his voyage across the Atlantic and reduce him to a menial position in the West Indies, is probably a fabrication. But if not, and if he had succeeded in overhauling Penn's vessel, the Welcome, he no doubt would have wished himself back in Salem searching for witches, since it was much easier for him to subdue suspected witches than smallpox with which Penn's vessel was so completely infected. We can readily understand how smallpox introduced into the West Indies, Mexico, the Province of Pennsylvania, and into New England, in the absence of vaccination, rapidly spread over the Western hemisphere.

Scarlet Fever.—Scarlet fever and measles, different as are their symptoms and anatomical characters, were considered forms of the same malady until the observations of Sydenham led to their differentiation about two centuries after the discovery of America. Inasmuch as they were not differentiated, the term measles, which was applied to an epidemic disease which appeared in the West Indies soon after their occupation by Europeans, may have been applied to measles or scarlet fever or sometimes to the one and sometimes to the other. But we infer from facts to be mentioned, that scarlet fever, insidious as it is and highly infectious, did not occur in the Western hemisphere until within the last two centuries. We will describe in our remarks on diphtheria the epidemic which, commencing in Kingston, about forty miles east of Boston, in 1735, gradually extended over New England, and reached New York City in two years. Monographs were written on this disease by Dr. Douglass, of Boston, and Dr. Bard, of New York. Dr. Bard says that Dr. Douglass described the same disease which he observed. We shall allude to this epidemic in describing the origin of diphtheria in this country. At present we desire only to say that Douglass states that patients exhibited a "flush in the face, and an erysipelas-like efflorescence on the neck, chest, and extremities. . . . "The flushing," he adds, "goes off gradually with a general itching, and in a day or two the cuticle skin scales or peels off, especially in the extremities." Is not this a clear description of scarlet fever? But some of those who have described this epidemic, as we shall see, say that one attack of the new malady does not preclude another, a noted characteristic of diphtheria and not of scarlet fever. It seems to me that this epidemic, which gradually spread westward over New England and Long Island, crossing the Hudson and extending to an unknown distance in the British possessions before it finally ceased, was in some places at least

a combination of scarlet fever and diphtheria such as frequently occurs at the present time.

With the exception of the brief allusions of Dr. Douglass to the widespread epidemic disease which exhibited the characteristics of scarlet fever occurring at the date mentioned, I have not been able to find any allusions to this exanthematic fever in the various writings which I have consulted prior to those published in the latter part of the eighteenth century.

Noah Webster, in his treatise on epidemics occurring in America tabulated those taking place since 1618. The first epidemic of scarlet fever which he recorded occurred in Philadelphia in 1774; subsequently it was frequent in America. Prof. Louis Thomas, of Leipzig, in his monograph on scarlet fever published in *Ziemssen's Encyclopædia* states that this disease spread from Europe over America. According to him it first appeared in Iceland in 1827. Twenty years later, he says, it extended over Greenland. Even if the statistics given are not exactly correct, we infer from the fact that scarlet fever was so seldom noticed by writers in America until within the last one hundred years, that its extension over the American continent did not occur for many years after the Kingston epidemic had either ceased or was rare.

MEASLES.—Most writers on the eruptive fevers agree that Rhazes, a Mahometan, belonging to the Arabic school of medicine, described measles in the tenth century. Sydenham in 1670, and Morton in 1674, gave such complete descriptions of measles and scarlet fever that they were henceforth regarded as distinct diseases, as we have stated above. In treating of scarlet fever we have stated that the late differentiation of this disease from measles renders it uncertain whether the eruptive malady which along with smallpox was so fatal to the Indians in the first decades following the discovery of America was measles or scarlet fever, but the following facts lead us to infer that it was the former.

Many people whose knowledge of measles has been obtained by observing cases treated under favorable circumstances can scarcely believe that epidemics of this disease are always very fatal among those who, like the American aborigines, are inadequately protected from cold and vicissitudes of weather, and whose surroundings are insanitary. Instances might be related showing the mortality of epidemic measles under such circumstances, as the epidemic among the Fiji Islanders, of which 40,000 died; the epidemic in the Faroe Islands, by which three-fourths of the inhabitants were attacked, with many deaths (Baumler); the epidemic among the Amazon Indians of Brazil, when half of the tribe perished; and the epidemic in the national army of Paraguay in the commencement of the war with Brazil, when one-fifth of the entire army perished.

In the late Civil War in the United States, according to the statistics

published in 1864, 38,000 cases of measles had occurred in the army with 14,000 (?) deaths. Moreover, as a reason for the belief that measles was introduced into America previously to scarlet fever is the fact that after its differentiation its epidemics were recorded by reliable writers many years before mention is made of scarlet fever. Thus Noah Webster had tabulated eleven epidemics of measles when he recorded the first epidemic of scarlet fever—that in Philadelphia in 1778.

DIPHTHERIA.—Those who have made a special study of diphtheria incline to the belief that its first occurrence in North America was in New England. It is stated that Samuel Danforth, of Roxbury, a graduate of Harvard, lost three of his children in 1659, within two weeks, from a disease which was designated "malady of bladders in the windpipe." Again, John Josselyn made two voyages to New England in 1638 and 1663, and in his memoranda he states that the English in New England "are troubled with a disease in the mouth or throat, which hath proved mortal to some in a very short time. This disease is designated as quinsies and impostumations of the almonds with great distempers of colds." Whether these early New Englanders had diphtheria or not I am unable to say, but nearly a century had elapsed from the time of Danforth and Josselyn when the much wider and more fatal epidemic, more clearly one of diphtheria, occurred. I have alluded to it in my remarks on scarlet fever, but the importance of the facts in regard to diphtheria requires that they be repeated in this connection.

On March 20, 1635, at Kingston, a town fifty miles eastward of Boston, the first case occurred of the disease, which was destined to overrun the British possessions in North America. The first forty attacked by it died; the first patient survived three days; the three next attacked lived four miles from the first patient. When the epidemic reached Boston, Dr. William Douglass made a full and accurate clinical examination of it, and wrote a monograph containing the result of his observations. Douglass, not knowing that Boston was soon to be the "Athens of America," states in his exordium that in plantation life neither honor nor credit are to be acquired by writing. His sole object in publishing his monograph was to induce others to investigate the disease more fully. Death, he states, usually occurred from the fauces or neck, which was greatly swollen. J. Dickinson, A.M., of Cambridge, a clergyman, also published what he designated "Observations on that terrible disease vulgarly called 'Throat Distemper.'" He writes: "Some expectorated incredible quantities of a tough whitish slough from their lungs. . . . I have seen several pieces of this crust several inches long, and near an inch broad, torn from the lungs by the vehemence of the cough." Dickinson also remarks that one attack of the epidemic disease does not protect from a second. One patient had at intervals four distinct attacks, the last being fatal. The

fact of the recurrence of the throat affection is sufficient proof of its diphtheritic rather than scarlatinous nature, as is also the fact that the characteristic pellicular inflammation sometimes occurred upon abraded or wounded surfaces at a distance from the fauces, while the latter was but slightly or not at all affected. This widespread and gradually extending epidemic of diphtheria was the first occurring within historic times in North America and probably in the Western hemisphere.

The Honorable Cadwallader Colden, Esq., His Majesty's Lieutenant-Governor of the State of New York, wrote a letter to Dr. Fothergill in 1753, printed in the *London Medical Observations and Inquiries*, vol. i. He writes that this new throat disease extended gradually westward from Kingston, traversing New England, but it did not reach the Hudson River until two years had elapsed. Colden said that it remained for some time on the east side of the Hudson, but finally crossed to the west side, and he believed that it spread over all the British colonies in America. As might be expected, in due time it reached New York, and it was described by Dr. Samuel Bard in a paper published in 1771 and having the following title: "An Inquiry into the Nature, Cause, and Cure of the Angina Suffocativa, or Sore-throat Distemper." Bard wrote as follows: "Upon the whole, therefore, I am led to conclude that the disease called by the Italians morbus strangulatorius; the croup of Dr. Home; the sore-throat of Huxham and Fothergill; this disease, and that described by Dr. Douglass, of Boston, however they may differ in the symptoms of putrifescency and malignancy, do all bear an essential affinity and relationship to each other, and in fact arise from the same leaven." Dr. Jacob Ogden, of Jamaica, Long Island, described this widespread throat distemper as he observed it in the townships of Long Island. His last paper on this malady was published in 1774, thirty-nine years after the first case in Kingston, and just before the breaking out of the Revolutionary war. I am not aware that any outbreak of diphtheria occurred in this country during the eighteenth century, after the commencement of the war. The fact that families deserted their homes and fled to a distance for safety, especially from the cities along the Atlantic coast, may aid in explaining the cessation of this epidemic. After the disappearance of this widespread epidemic we hear little or nothing of the occurrence of diphtheria upon this continent until nearly a century had elapsed, except that cases of pseudo-membranous laryngitis, popularly designated membranous croup, occurred in many localities, but with little or no contagiousness. It may have been produced by the streptococcus, and have been a croup of the pseudo-diphtheritic nature.

True diphtheria prevailed in Europe in the first half of the present century, and received its name from Bretonneau in 1821. In the decade following 1850 it reappeared in a severe form in America, and conveyed by commerce and travel, it has extended over a large part of

the Western hemisphere, and has become established or endemic in its cities.

The facts related above show that while a higher mental attainment and the comforts and achievements of civilized life have resulted from the discovery of America by Columbus, the most fatal and infectious diseases of childhood have also been imported from the old to the new world. A recent French statistician says that the aggregate number of the French race is gradually diminishing, and largely from the effects of diphtheria.

It would be interesting were it possible to ascertain exactly what were the indigenous diseases of the children of American Indians. An interesting paper entitled "Diseases of the Indians West of the Mississippi" was published in the *N. Y. Med. and Phys. Journal*, 1822. The author writes as follows: "The diseases of the Indian children are few compared with those of civilized life. Irritations of the bowels sometimes occur, yet they are not at all frequent, and they have immediate means of relief in a prescription made from burnt mussel-shells powdered and given in dittany tea. Diarrhœa and croup also occur, and those inhabiting marshy land, especially such as reside on the shores of rivers that are at times inundated, are somewhat subject to intermittent and remittent fevers in the autumnal and spring months." The writer adds that rheumatism and pulmonary consumption are common among the Indians west of the Mississippi, and that those who have been reduced by the enervating corruptions of the frontier settlers have of late been affected with typhus.

Again, in the report of the Indian establishment on an island in Lake Huron, in 1841–42, the following is the statement of the diseases prevailing: Toothache, rheumatism, neuralgia, ague, wounds of chest, and mild whooping-cough. It is seen that all of the fatal acute infectious diseases of American children of the present time which desolate innumerable homes, and check to a great extent the increase of population, have been imported from the Eastern hemisphere. The medicine man of the Indians was probably more successful in curing the Indian child by his incantations and few herbs, before the discovery of America, than is the educated European physician having a diploma from a renowned school, who is compelled to treat more fatal infectious diseases at the present time. Indeed, so far as we can perceive, if the Eastern and Western hemispheres had been created separately, revolving around each other like binary stars, the inhabitants of the Western world, though lacking the cultivation of the Eastern world, would have escaped the ravages of the most infectious and fatal of the maladies which affect the human race.

A CASE OF LEUKÆMIA, WITH RARE LYMPHOID GROWTHS OF ORBITS AND PAROTID GLANDS.

By Thos. D. Dunn, M.D.,
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H. G., aged eight years, came under my observation in the spring of 1891, in consultation with Dr. Pyle, of Glen Mills, with a stubborn case of granular conjunctivitis. Although slightly anæmic at the time, he seemed to enjoy good health. There was no history of cancer, syphilis, or tuberculosis in either the father's or mother's family. He had a younger sister who made a complete recovery from a severe attack of scarlatinous nephritis a year before. The subject of this report had not been a robust child, but never had any serious illness. He was unusually intelligent and studious.

The lids improved under yellow oxide ointment and occasional applications of nitrate of silver solution.

For the anæmia tincture of the chloride of iron and cod-liver oil were prescribed. In autumn he returned to school and studied without discomfort. General condition good.

The patient was again brought to me December 15, 1891, for a slight swelling in the left parotid gland—about one inch in each diameter. This swelling was quite hard, with well-defined outline, and immovable. It impressed me as a growth of unusual position and character. It was not tender, but was slightly adherent to the skin, which was not discolored except by enlarged subcutaneous veins.

The parents noticed the swelling three weeks previous to my examination, but attributed it to cold contracted at school, where he sat by a broken pane of glass—his left side being exposed. The cervical lymphatic glands were not enlarged. Skin and mucous membranes pallid. He was ordered a highly nutritious diet, the syrup of iodide of iron internally, and locally tincture of iodine to the enlarged gland.

Dr. Pyle was again called to the case January 23, 1892, and found slight increase in the parotid swelling, and an appreciable enlargement of the cervical lymphatic glands of left side. During this period the anæmia and loss of flesh steadily progressed in spite of the most carefully regulated diet. Dr. Pyle directed as much easily assimilated nourishment as possible, and the continued use of tincture of chloride of iron, Fowler's solution, bichloride of mercury, and, at times, quinine and cod-liver oil. Soon the axillary and inguinal lymphatic glands began to enlarge. About the middle of March a hardness began to develop over the eyes, with slight thickening in both temporal regions. The pulse was weak, and ranged from 96 to 116. Temperature was never below 99°, or above 101° during February and March. He kept about the house, and was frequently on the piazza for play. The anæmia and emaciation steadily progressed.

April 5. The patient contracted a heavy cold, causing a temperature of 103°, and severe sore-throat. I was called in consultation April 12th, and found an ashy gray membrane over both tonsils, extending to uvula and soft palate; submaxillary lymphatic glands enlarged and

tender; temperature 102°; pulse 130; swallowing difficult and painful; marked emaciation; lips, tongue, and nails blue and very anæmic; occipital, inguinal, axillary, and cervical lymphatic glands moder-

FIG. 1.

FIG. 2.

ately enlarged, but not tender; spleen and liver slightly enlarged, but no tenderness over them. The patient had suffered from attacks of pain in splenic region for some time. The left parotid gland

was greatly enlarged, of stony hardness, outline well defined. There were also crescentic bodies over either eye, not firmly connected with lids. These swellings began at nasal end of orbit, and extended outward beyond external canthus, the larger end toward the nasal angle. These were also of marked hardness, but somewhat elastic, free from tenderness, slightly attached to lids, but firmly attached to orbital arches. They caused considerable exophthalmus, but only partially interfered with motion of lids. No conjunctivitis; corneæ healthy; vision normal.

Similar, but flat, hyperplasias were found in each temporal region; the outline of these was not so well defined. A careful search revealed no other such growths. Marked deafness was attributed to the closure of external auditory canals by the parotid and temporal hypertrophies. Treatment was directed to the recent diphtheritic complication.

14*th*. The condition of throat was improved; temperature 101°; pulse rapid, feeble, compressible; submaxillary lymphatics decreased and less tender to touch. Nourishment and stimulants were given freely and well retained. A drop of blood under the microscope showed a decided increase in white corpuscles. The blood was of a very pale color, resembling sero-pus mixed with blood. This examination confirmed the diagnosis of leukæmia, which had been suspected at previous visits by both Dr. Pyle and myself.

17*th*. Slight improvement in the general condition, owing to the subsidence of the acute diphtheritic attack. Temperature 100°; pulse 124.

At this visit a careful blood-count was made. The result showed one colorless corpuscle to fifteen red; 1,830,000 corpuscles (of which 122,000 were white) to a cubic millimetre, and about 30 per cent. of hæmoglobin. Both hæmoglobin and number of corpuscles were less than one-third the normal amount.

May 7. I saw him for the last time. The anæmia and emaciation had increased; temperature 100⅘°; pulse 124, and very feeble. The deafness had also increased, but vision was still good. Unfortunately no ophthalmoscopic examination was made. The leukæmic growths had all increased, and a small growth about one-half inch in diameter had developed in the right parotid gland, directly in front of the ear.

The little sufferer had had several attacks of epistaxis, and on May 5th had two hemorrhages of bowels. He steadily grew weaker, and died of exhaustion May 18th. Unfortunately, we were unable to secure an autopsy, or even to obtain a portion of the described growths for microscopic examination. There can be no doubt, however, as to the diagnosis of leukæmia.

After a careful search I have been able to find the record of but few cases of similar leukæmic growths; doubtless there are others, but the scanty literature of the subject is indicated by the absence of any reference to this condition by modern writers in our leading medical works.

Dr. Henry D. Noyes (*Diseases of the Eye*, p. 666), however, cites a case of lymphoid growths of both orbits in Hodgkin's disease. This case was reported in full in *The Medical News*, 1882, vol. ii. p. 681, by Dr. Richard H. Derby.

Cases have been carefully reported by Chauvel, Leber, Osterwald,

and Fröhlich. The fact that I have been unable to find any reference to these in English, together with their very striking similarity to the clinical picture herein presented, justifies a somewhat full abstract of them.

FIG. 3.

Dr. Richard H. Derby's case of Hodgkin's disease.

Chauvel's case, reported in *Gazette hebd.*, 1877, No. 23. Patient, aged forty-one years, custom-house officer, was admitted to the military hospital, Val-de-Grâce, October, 1876, for a tumor of left side of face. Previous to this his health had been good; no history of syphilis. In July, 1876, a small swelling appeared in left upper eyelid. It developed rapidly, and was free from tenderness and pain. By September it became painful. On admission to Val-de-Grâce the swelling had extended to the cervical lymphatic glands of both sides, which formed a chain the length of the sterno-cleido-mastoid. There were tenderness and redness at the most prominent point above left eye. Ulcers were found on left buccal surfaces. Neuralgic pains of left side of face and head existed, with profound cachexia. Tonic treatment and sedative applications were resorted to without benefit. Diagnosis by Prof. Perrin: sarcoma of face with symptomatic adenitis. November 12th he came under the care of Chauvel. The tumor occupied the left supra-orbital region, left upper eyelid, extending from slightly above eyebrow to root of nose. Left jaw also swollen. Left eye completely closed.

The tumor was elastic and hard, and seemed firmly attached to subjacent parts. There was slight deafness. Patient saw black spots before right eye. Ophthalmoscopic examination revealed normal media. Papilla also normal, but outside of disk were several hemorrhagic spots, one large one above and one below. Prof. Perrin states that the appearance of the retina was that of hemorrhagic retinitis, the result of his general state, and possibly leukæmia.

November 19th, had slight hemorrhage of bowels.

Died November 21st, from exhaustion.

The tumor of upper eyelid was composed of cellular elements analogous to those of lymphatic glands; these were united without apparent stroma. The growth extended to all parts of the eyelid, and was not encysted. Teas-

ing the tissue disengaged reticulum similar to that of lymphatics. Unfortunately the medulla of the bones was not examined. The only lymphatic glands involved were those of the cervical region. The spleen was somewhat enlarged. Liver greatly enlarged; cells not diseased; interlobular capillaries were dilated and filled with leucocytes; masses of leucocytes were also found in interlobular spaces—changes which characterize the leukæmic liver. The right side of the heart was filled with chicken-fat clot. Large quantities of leucocytes were found in the vessels of the heart, but the organ was free from disease.

Unfortunately, no microscopical examination of blood was made, but the marked anæmia, enlargement of the lymphatic glands of the neck, and the accumulations in the vessels of the heart and the hepatic glands make the diagnosis of leukæmia indisputable.

Leber's case, reported in *Archives of Ophth.*, 1877, No. 24, p. 295. C. F., aged forty-eight years, with the exception of an attack of rheumatism had enjoyed good health prior to August, 1876. No history or evidence of syphilis or malaria. At that time he noticed a swelling of under lids and later of upper lids of both eyes, and suffered from languor and weakness. In September was treated by a foreign oculist with iodine internally and locally, without benefit. Had an abnormal prominence of eyeballs. On account of eye trouble appeared before Göttingen eye clinic, April, 1877. His condition was striking and unusual. Lids of both eyes enormously enlarged in all diameters on account of elastic growths which were not adherent to edge of orbits. Skin of a brownish color, with enlarged subcutaneous veins. Marked exophthalmus, the result of the outward pressure of tumors, which extended to subconjunctival connective tissue; also smooth distended swelling in region of temporal muscle, which extended toward forehead, larger on right side. Nasal cavities and mouth normal. Ophthalmoscopic examination revealed an extensive hemorrhagic retinitis of both eyes; papillæ red but not swollen. Condition similar in each eye. Vision: O. D., 20/xx; O. S., 20/xxx. Heart normal. Urine: specific gravity 1010; reaction acid; considerable albumin; granular casts and fatty epithelium.

Liver and spleen decidedly enlarged. Blood examination showed a large increase of white blood-corpuscles.

A small piece of growth removed from conjunctival surface was examined. It was soft, somewhat jelly-like, slightly transparent. Microscopical examination showed lymphoid cells crowded into connective-tissue meshes. This growth was, doubtless, analogous to leukæmic growths in other organs. Lymphatic glands of both sides of neck enlarged, and large, painful, thickened tumefaction over sternum. Marked lassitude and debility. Temporary improvement derived from general sweats and acetate of potassium. In May the patient's general condition was much worse; temporal and orbital tumors increased; liver and spleen greatly enlarged.

His condition steadily grew worse, and he died at the end of October, delirium having existed for eight days.

Leber believed this interesting condition to be the result of leukæmia. He, however, admits the possibility of the retinitis being due to the nephritis, but remarks that the extravasations extending to the periphery of the eye-ground are unusual in the latter disease. Unfortunately, an autopsy was refused.

Osterwald's case, reported in *Archives of Ophth.*, 1881, No. 27, p. 203. Patient, a boy, aged four years, appeared at Göttingen eye clinic May 25, 1881. Parents had always been healthy; both syphilis and hereditary disease denied. The boy had measles at the age of two years, was pale and weak afterward, otherwise had been healthy.

Soon after Easter parents noticed a swelling in right upper eyelid, and later a similar swelling in left, the eyeballs protruding. When he appeared at the clinic the following symptoms were observed: Marked double exophthalmus. Both upper lids enlarged in all diameters, and under skin of left a network of bluish veins visible which extended to forehead and right temporal region. Right upper lid strongly pressed out by a hard, elastic tumor. This tumor

began at orbital arch, to which it seemed attached, and extended from root of nose to outer angle of eye. In left upper lid was a similar growth, though not so large. In temporal region of either side was a smooth, round, subcutaneous swelling of doughy consistency.

Left conjunctiva and cornea normal; right conjunctiva injected and cornea ulcerated. Ophthalmoscopic examination showed left papilla cloudy, veins disturbed and tortuous; cornea interfered with examination of right retina.

The presence of hemorrhage could not be determined on account of restlessness of patient. Vision not accurately ascertained, but the face of a watch could be seen. Small hardened lymphatic glands on both sides of the neck. Complexion extremely pale and cachectic. Liver and spleen somewhat enlarged. Blood-count showed one white corpuscle to three or four red.

May 27. Prof. Ebstein was called to the case, and he mentions, in addition to the above, enlargement of inguinal lymphatic glands, and nodules along the costo-cartilaginous articulations of the ribs. Blood, fluid and watery, but not wanting in fibrin.

30*th*. Pulse rapid and feeble; some fever.

June 1. Slight fever.

2*d*. Temperature, 38.3° C. Epistaxis. Evening temperature, 38.8°.

3*d*. Evening temperature, 39.5°. Bleeding from nose and mouth. Died at midnight.

Autopsy by Prof. Orth. A number of small tumors, firm and of yellowish color, were found in both pia and dura mater, which were distinctly of adenoid character. Heart contained large, yellow, firm coagula. Strong tendency to ecchymosis over surface of heart, pleuræ and the entire alimentary tract. Bronchial lymphatic glands normal, but cervical, axillary, inguinal, and mesenteric glands enlarged, as were liver and spleen. Retinæ contained numerous small hemorrhages. Papillæ swollen and pale.

The orbital tumors on section showed meshes of reticular tissue infiltrated by leucocytes; the meningeal nodules showed the same structure. Orth regarded these leukæmic neoplasms as being of the lymphadenoid variety and a secondary result of the disease. The marrow of the ribs and right femur was soft and tender, and of the brownish-yellow color of leukæmic marrow.

Fröhlich's case, reported in *Wiener med. Wochenschr.*, 1893, Nos. 7, 8, 9, 10. A man aged twenty-five years, a painter, was first seen July 27, 1892. His mother had had frequent attacks of pulmonary hemorrhage; father and several sisters healthy. In youth the patient suffered from rhachitis, of which there are still marks on thorax. No history of syphilis.

May 1. Glands of axilla enlarged, associated with cough, expectoration, and dyspnœa; soon afterward other glands were involved and upper lids of both eyes began to swell.

July 27. Tumors in lids, size of walnuts; fundus of left eye normal; right could not be examined on account of growth. Tonsils and pharynx normal; vocal cords pale and movable, with two dark-red subcordal tumors. Cervical and axillary lymphatic glands enlarged, also small swelling in middle of forehead, right humerus, and right tibia. Examination of blood showed: red corpuscles, 3,570,000; white, 137,000—1 white to 26 red; hæmoglobin 70 per cent.

30*th*. Tracheotomy performed for the alarming dyspnœa, with complete relief. A sharp attack of pleuro-pneumonia terminated fatally November 24, 1892. Blood-count during the attack showed 2,882,353 red corpuscles, 8823 white—1 white to 326 red. The writer attributes this apparent improvement in the condition of blood to the pleuro-pneumonia causing the destruction of lymphatic elements. The swelling in orbits and lymphatic glands and the subcordal tumors were greatly reduced, the latter so much that the voice before death was restored. Careful examination showed the tumors to be lymphomatous, and the reporter considered the disease pseudo-leukæmia.

Biesiadecki (*Jahrb. d. Ges. d. Aerzte*, 1876) describes a case of leukæmia with tumors of skin and enlargement of parotid glands. He also

cites cases related by Haltenhoff, Mikulicz, and Gordon Norris, in which were similar growths of upper lids, parotid, and other salivary glands.

At the last Dermatological Congress, Peltauf and Riehl discussed the question of leukæmic skin tumors from a pathologico-anatomical standpoint.

Fuchs (quoted by Fröhlich) mentions the case of a man, aged sixty-one, who had for two years large lymphoid growths of upper lids, and Kaposi (*Jahrb. d. Ges. d. Aerzte*, 1885), one of lymphodermia perniciosa in connection with leukæmia.

Birk (quoted by Fröhlich) has called attention to a double exophthalmus dependent upon lymphomatous new growths of the back part of the orbit, but it is not stated whether leukæmia was present.

Hochsinger and Schiff (*Vierteljahrsschr. f. Dermat. u. Syph.*, 1887) mentions a case of leukæmia in an eight-months-old child, in which were lymphomatous growths involving head and skin.

Ziem (quoted by Fröhlich) cites a case of symmetrical swelling of both upper lids causing ptosis, in a man aged thirty, associated with enlargement of parotid glands, lymphatics of neck, of axilla, and orbital gland. Spleen not enlarged. Examination of blood showed nothing abnormal. A microscopical examination of a piece of the tumor showed quantities of granulative tissue. In the centre of the tumor was a tendency to cheesy formation, without the presence of tubercle bacilli. An intercurrent attack of erysipelas caused the tumors almost to disappear, but they returned after the attack subsided.

NEURALGIA OF THE RIGHT CRANIAL NERVE OF SIXTEEN YEARS' DURATION; EXCISION OF THE THREE DIVISIONS AT THE GASSERIAN GANGLION; DEATH.

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AND

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HISTORY AND EXAMINATION BY DR. ESKRIDGE.

Ernest G. G., aged fifty-two years, farmer, was brought to my clinic at the Medical Department of the University of Colorado, early in July, 1892. The family history shows freedom from insanity, epilepsy, neuralgia, and consumption. The father and mother lived to advanced age; the cause of their death is unknown.

The patient was always well and strong until 1876, when he cut his left wrist with a piece of pottery. A violent cellulitis involving the entire forearm resulted, numerous abscesses of the arm developed; he was

considerably reduced in strength, and confined to his bed for a period of six weeks. He stated that he apparently completely recovered from the results of the wound, but that a few months later, his body, while overheated, was rapidly cooled by a draught of air. The next day after the exposure he suffered from severe neuralgic pain in the right side of the face. The pain was paroxysmal, and most intense in the teeth and the right eye, although the entire right side of the face was involved to a slight extent. No pain was experienced in the distribution of the fifth cranial nerve over the scalp. The attack lasted six weeks. He was free from pain for a year, when he had a second seizure, lasting only a few days, in which pain was limited to the right side of the face. For several years he suffered from one or two seizures of neuralgic pain each year, but the attacks returned more frequently, became longer in duration, and the pain was more severe as time wore on, until six or seven years ago, when he was suffering about half the time. During the last three years the pain in the face has been constant. One year ago he began to suffer from severe pain in the large joints, and these have swelled considerably.

Status præsens: He has a large frame, but is thin, and presents evidences of intense suffering. He says he is one hundred pounds lighter than he was fifteen years ago. He suffers from severe and constant pain in the right side of the face, and his misery is still further increased by frequent paroxysms of pain, which causes the muscles of the right side of the face to contract convulsively. The pain has never extended above the supra orbital ridge, but it extends backward from the exit of the supra-orbital nerve to a point above the right ear. The pain has never involved the nerve in its distribution to the hairy scalp. The second division of the right trigeminal nerve is the seat of constant pain; the first, in a portion of its distribution, is frequently painful, and the third division is occasionally so. On carefully testing for the various forms of sensation no changes from normal were found except in the right side of the face, where, especially in the region of distribution of the first and second divisions of the great sensory nerve, there seemed to be a condition of hyperalgesia. The contact of my finger, the æsthesiometer, and sometimes even of a feather, would cause him the most violent paroxysms of suffering. It was impossible, on account of his sufferings, to test tactile and temperature senses on the right side of the face.

Taste, right, imperfect; left, normal; smell was very much more pronounced on the left than on the right side. Hearing for watch was poor on both sides, but the tuning-fork was better heard with left ear. Eyes presented no marked changes further than slight paleness of the nerves, which was more marked in right eye. He said that vision had lessened considerably during the last two or three years. In the right eye it was 20/XL.; left, 20/XXX. The fields were normal.

On examining the motor system, nothing was found which could not be accounted for by the swollen and painful joints. The left shoulder, both knees, both ankles, and several toe joints were the seat of pain, and were swollen and limited in motion.

He was, at my request, admitted into the Arapahoe County Hospital. He was kept in bed, and given large doses of sodium salicylate. This soon relieved his joint pain, but it had no appreciable effect on his trigeminal nerve pain. Large doses of quinine were tried, but this seemed to give no relief. No agent employed appeared to have the slightest permanent effect in lessening his suffering.

After a careful study of his case, notwithstanding his reduced state of health, I not only advised but urged him to submit to the necessary operation for the removal of the Gasserian ganglion, or the excision of the three divisions of the nerve at this ganglon, as the case might be. He replied that he had placed himself in my care, and would gladly do anything that promised him entire relief from his intolerable suffering. The attending surgeon was notified, and set the day for the operation. After the man was anæsthetized the surgeons decided to first try the superficial operation, and then, if no relief was obtained, to excise the Gasserian ganglion. I did my utmost to dissuade them from this procedure, urging that the man had submitted to the operation with the expectation that only one operation would be necessary, that there was no good reason to expect the slightest relief from excision of the peripheral ends of the three grand divisions of the fifth cranial nerve, and that when he should find no relief from the minor operation, he would become discouraged, and refuse to submit to the major. I was especially anxious that the radical operation should be performed, because the man had come to Denver from a neighboring State, and desired me to decide the degree of the operation necessary for his relief. The surgeons did not seem to be willing to undertake so great an operation at that time, and I submitted, hoping, without much reason for hope, that some good would be accomplished by the superficial operation.

The operation consisted in dividing the distal ends of the three divisions of the trigeminal nerve at the mental, supra-, and infra-orbital foramina. Before the patient regained complete consciousness from the anæsthetic he began to groan with pain, and after the influence of the anæsthetic had worn off he said the pain was greater than it was before operation. He remained in the hospital just long enough for the wounds to heal. He suffered constantly, and was disgusted with our failure to relieve him, and left, refusing to submit to another operation.

I never saw the patient after he left the hospital. Dr. A. J. Baker, who performed the major operation on him, about one year after he had submitted to the minor, will give an account of his condition at the time of the second operation.

OPERATION AND REMARKS BY DR. BAKER.

Mr. G., reported to me for treatment in July, 1892, when I turned him over to Dr. Eskridge, who gives the above report.

He also reported to me immediately after leaving the hospital, and was soon compelled to return to his home, as his stay in the hospital had practically spent all the money he could raise. He moved to Denver in May of the present year, where I found him on my return to the city, about the middle of June.

His condition was very much worse than when I last saw him, nearly a year before. He was so nervous that he would break down and cry

over the most trivial affairs. His assimilation was very poor, and gradually growing worse. He had not been free from his neuralgia at any time during the last year, which had greatly increased in severity. This pain came on every few minutes, night and day, and was almost as severe as the severest pain of labor, convulsing, apparently, every muscle in the body. He was using much larger doses of morphine, and also drinking nearly half a pint of whiskey daily. His family had taken a loaded revolver from him three different times during the last year while he was suffering from these pains, when he was trying to discharge the contents of the revolver into his brain. I appointed June 26th for the operation, and desired very much to postpone it on account of a lack of time, when I learned that he had decided to cut his throat that night if I did not operate.

As circumstances compelled me to operate, if at all, in his house, I ordered all of the woodwork scrubbed and the whole house thoroughly disinfected. I endeavored to make everything as perfectly aseptic as possible, and feel that this part of my work was quite suuccessful.

I operated in the afternoon of June 26th. I followed Rose's plan quite closely, making one circular incision through the skin from above the right zygomatic arch, near the eye, back near the ear, downward in front of the ear, and then followed the posterior edge of lower maxilla to near where the facial artery crosses it. This flap was dissected forward and stitched to skin near the mouth. The zygoma was then exposed and drilled, two holes being near the front and two near the back part of the arch. I then sawed the arch between each of these pairs of holes, and turned the arch with the masseter muscle downward. I then removed some adipose tissue, which exposed the coronoid process of the lower maxilla, which was divided with bone-forceps, and the temporal muscle turned upward. I then made a diligent search for the internal maxillary artery, but did not find it. So I proceeded to remove the external pterygoid muscle from the great wing of the sphenoid bone to search for the foramen ovale. I secured the inferior dental and gustatory nerves near the lower border of the external pterygoid muscle and internal to ramus of the jaw, and followed them up to the foramen ovale.

The muscle being removed from the wing of the sphenoid back to the foramen ovale, I placed the trephine anterior and external to the foramen, as indicated by Drs. Andrews and Rose, and took out a half-inch button. I was able to depress the trephine by means of an extension I will describe later, so that the plate was cut through almost simultaneously. I then cut away the plate back to the foramen ovale with a pair of rongeur forceps.

There was no pulsation of the brain discernible, nor the slightest protrusion through the opening just made. The dura was very hard, giving almost the impression of bone—certainly an inflammatory thickening. The conditions there made it impossible to reach the ganglion behind, as recommended by Rose, so I was compelled to work in front. I secured the second branch of the fifth nerve, clipped it off with a pair of curved scissors, and entered the capsule of the Gasserian ganglion between the first and second branches. I then scooped out the contents of the capsule, and clipped off its lower part, leaving its upper part intact.

I then removed the coronoid process from the temporal muscle previously severed, checked the hemorrhage as well as I could, and thoroughly cleansed and closed the wound. I took the time to wire the zygoma in

place, the drilling and wiring taking less than five minutes. I thought this time not wasted, as necrosis has often followed operations where the zygoma has not been wired in place.

The oozing was very excessive, hindering us greatly in the operation; yet we had no trouble from arterial hemorrhage. I closed the fascia over the zygoma with catgut, and then closed the flap of skin with a continuous catgut suture, the wound coapting exactly. With the exception of the great difficulty of anæsthetizing the patient, and inability to keep him perfectly under its influence, which hindered us considerably, we met no greater difficulties than we anticipated.

The patient slept nicely all night, and was perfectly relieved of his neuralgia. He had only about a degree of temperature elevation the next morning, but he had not taken much nourishment. I ordered milk given him every three hours during the day. On my return in the evening I found that he had only taken about a glass of milk, and was very restless. His temperature then was about 101°. As I learned that no arrangements had been made for a competent nurse that night, I decided to stay with him myself. I was only able to control the restlessness for a brief period at a time. His pulse gradually weakened, and he died of shock thirty-eight hours after the operation.

I could not secure a post-mortem, which was certainly very desirable. I opened the wound, however, sufficiently to find that there was not a particle of pus present, and that everything about the wound seemed to be in perfect condition. The wound was perfectly united all around, and there is no doubt, had the patient survived the shock, that we would have had a perfect result.

It was probably a mistake to attempt such an operation at his own house, even under the circumstances; partly because it was not possible to make his house as perfectly aseptic as a hospital, but principally because he could not be properly controlled at home.

To my knowledge, this operation has only been performed twelve times. All cases were perfectly relieved of their neuralgia, and only two cases proved fatal. Dr. Rose, of England, has performed the operation six times, his last case proving fatal. The same number of operations have been performed in America; twice in Chicago, once in Kansas City, and three times in Denver, my case only proving fatal.

THE COMPARATIVE VITALITY OF MEN AND WOMEN.

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We cannot always agree with Sidney Smith's dictum, "There is nothing so unreliable as figures, unless it is facts." Much less substantial oftentimes are the impressions which are held by the laity, and occasionally even by the profession. The writer had some nebulous ideas dispelled recently by an investigation of the mortality of men and women. He submits herewith the conclusions.

It is well recognized that women, although more delicate than men in most respects, have a greater average longevity. And this is true in spite of childbearing. All life-tables founded on a general population show this. Among the best of these tables is that constructed by Dr. Farr on the facts furnished by the English census of 1841 and 1851, and the mortality reports. It is known as the English Life-table No. 3. In this table it was noticed that woman enjoys a greater expectation of life at every age, without exception, than man. This is commonly supposed to be due largely to her more sheltered position, which is chiefly obtained at man's expense. His dissipations also are supposed to account somewhat for his inferior longevity. It is doubtful, however, if either of these factors is of much importance. The table of life-expectations tells only half a truth. A greater tenacity of life in the later years may more than counterbalance a higher mortality in the earlier years.

To get at the whole truth we must examine a table which shows the mortality per mille for each age of each sex. In this way each year stands by itself, and is not affected by antecedent or subsequent years. The writer constructed a table for this purpose. The male mortality was taken from an article by D. I. McG. McKenzie in the *Journal of the Actuarial Society of America*. The female mortality was computed by the writer. The life-table from which the figures were obtained is that known as Dr. Farr's English Life-table of Healthy Districts. This is based on the mortality records and census reports of those selected districts in England in which the annual mortality per mille was seventeen or less. Although it necessitated more labor, this table was used because it is nearer the normal. All the facts shown by it are substantiated with no material difference by Farr's English Life-table No. 3. From this mortality table the following conclusions were drawn:

1. During the years 0 and 1 the female mortality is much less than the male, being 92.64 and 31.88 per mille against 112.80 and 35.08. For the next three years it remains still a little less. During this period the distinctions between the two sexes in hygienic matters are practically *nil*. Both are dressed alike and fed alike. But in spite of this the female mortality is less.

2. About the age of five, or a little earlier, some difference in dress, exercise, and exposure is manifested. The girl stays in the house and plays with her dolls, while the boy is outside making mud-pies or throwing snowballs. The influence of these changed conditions is promptly shown in the female mortality. It now passes that of males. After this it steadily falls in both sexes to the year twelve, when it attains its lowest point. It is then 3.56 per mille for males and 4.28 for females. From that point it constantly rises for both sexes, being always larger each year than the preceding one.

3. It is commonly supposed that the establishment of the sexual function is attended with graver consequences in the female than the male. An inspection of the table threw some doubts on this. It is true that from twelve to sixteen the female mortality increases more rapidly than the male, the gain being respectively 1.68 per mille and 1.18. But from sixteen to twenty the increase is much more rapid on the male side, being 2.21, while the female is only 1.70. In England the age of puberty is not much earlier than fourteen or fifteen. Furthermore, those diseases which can be ascribed to the development of this function are usually chronic. However, another factor enters which doubtless has some influence. Most men have to begin at this age the struggle for existence, with its attendant hardships and vices. Of course, in this contest the weaklings would be thinned out early. It is impossible to decide which of these factors is the more important in increasing the male mortality at this period.

4. From this point the male mortality slowly gains on the female until the year forty-six, when it just equals it, both being then 11.11 per mille. This year represents the practical end of childbearing. To the influence of parturition we can probably ascribe the greater female mortality during the preceding years. The difference, however, is never great. It is most marked at the year thirty-four, when it amounts to 0.81 per mille. The male mortality is then 8.52 and the female 9.33.

5. The next ten years, from forty-six to fifty-six, represents the period of the menopause in women, a great climacteric. It is "the critical period for women" in the minds of the laity and most of the profession. But a careful examination of the table showed the contrary. The rise in female mortality during this period is just as gradual as it was before. Much more startling was the appearance of the male mortality. Certainly this is *man's* critical period. The old doctrine that he too had a great climacteric is most strikingly shown. In the ten years from forty-six to fifty-six the gain in mortality per mille per annum for males is 6.32, while for females it is only 3.47. We can only guess at the causes of this greatly increased mortality among men. Perhaps his dissipations just now make themselves felt; perhaps the syphilis of his youth is just drawing its last check; perhaps the hardships of his occupation have just now bankrupted him. But why should these manifest themselves at a period which is popularly fraught with so much peril only to women?

6. From this point the mortality of women gains so rapidly on that of men that the period of fifty-six to sixty might be called a "critical period" for them. After this the two run on to the end of the chapter in nearly parallel lines, the female being always less than the male. The difference between the two ranges from 1.4 at the age of sixty, to 8.7 at the age of eighty. After this it fluctuates considerably.

7. It is often said that although woman's average longevity is greater than man's, yet great age is attained only by man. Biblical references on this point are not of much value, for in the days of the patriarchs few women received historical consideration. In a list[1] of about 300 persons who had attained the age of 120 years, or greater, the writer counted the names of over sixty women. This is 20 per cent., and a fair proportion when one considers how little historical importance was attached to women a century or two ago.

8. Some of the inequalities in the mortality of men and women have been explained in the previous sections. But one great fact remains inexplicable, and that is woman's greater tenacity of life. It cannot be due to her sheltered position and comparative freedom from vice, dissipation, worry, and toil, for it is manifested in the cradle as well as in old age. It is strikingly shown in the years of infancy; then the interregnum of bad management in childhood, and later of childbearing, affect it adversely. But after these it again asserts itself.

Perhaps this superior vitality is a relic of the time when our ancestors swung from tree to tree by the aid of their tails. They were undoubtedly polygamous. At least Darwin says that the highest apes now extant are polygamous.[2] If they were polygamous, there must have been an excess of females. This excess could have been maintained in only two ways, either by a plurality of female births or a greater tenacity of life in those females which were born. But we know that at present there is a plurality of male births everywhere, although the popular impression is to the contrary. An inspection of the birth reports of the following countries and States for the years mentioned proved this conclusively Russia, 1858; Austria, 1857; France, 1860; England and Wales, 1860; Prussia, 1861; Spain, 1861; Belgium, 1860; Bavaria, 1860; Norway, 1860; Greece, 1861; Indiana, 1886; Michigan, 1872; New Hampshire, 1885. In every case there was a plurality of male births. The average of the whole showed thirty-nine males to thirty-seven females.

This fact disproves the existence of a female plurality at birth, and it seems fair to assume that such was the case likewise in those primitive times. If so, the hypothesis of a greater tenacity of life among the primeval ape-women must be accepted. Perhaps from these Eves it has descended to their present successors.

[1] Insurance Guide and Handbook, by C. Walford, London, 1867. The value of the evidence in most of these cases of extreme longevity is very dubious, but that applies equally to both sexes.

[2] Descent of Man, page 217. He mentions the gorilla, some baboons, mycetes caraya, and cebus capuchinus, as being all polygamous.

REVIEWS.

A TEXT-BOOK OF OPHTHALMOLOGY. By WILLIAM F. NORRIS, M.D., Professor of Ophthalmology in the University of Pennsylvania, and CHARLES A. OLIVER, M.D., Surgeon to Wills Eye Hospital, Philadelphia. In one octavo volume of 641 pages, with 357 engravings and 5 colored plates. Philadelphia: Lea Brothers & Co., 1893.

FOR some time we have looked for this work, as it was known that the authors had for several years had it in preparation, and their high standing in the profession had warranted the hope that the ideal text-book at last had come. We are sorry that our hope was unfounded, for we confess to deep disappointment, in that nothing new or in the way of progress is to be noted; especially are we at loss to know why reproductions of old prints are constantly used in new books when photographs of actual cases, to be had at every clinic, can be so easily used, and when properly tinted in natural colors make an object-lesson not easily forgotten, beside making the volume containing them of marked value. The volume is divided into two parts, the first part by Charles A. Oliver, M.D., and the second part by the senior editor, William F. Norris, M.D.

Part I. contains two hundred and eighty pages, divided into ten chapters; these embrace the anatomy, physiology, and embryology of the eye, together with optics and the errors of refraction. Part II. is divided into nineteen chapters and treats of the diseases of the eyes, embraced in three hundred and forty-one pages.

The chapters on Embryology, Anatomy, and Physiology are good and well illustrated; we note, however, that the inter-retinal fibres of the optic chiasm are spoken of, when we were under the impression that this old idea had been abandoned.

Chapter IV., "Optics, Catoptrics, and Dioptrics," is exceedingly full, clear, and concise, and will be fully understood by all readers. Chapter VIII. is devoted to an exposition of the "shadow test," "retinoscopy," etc., the author preferring to use the term *fundus reflex test*, "as it distinctly shows that the results are dependent upon the play of light and shadow, through media of different powers, strengths, and curvatures, on the pigment coat of the retina." He says: "It should never be used for the prescribing of correcting lenses, except where it is impossible otherwise to obtain proper subjective results." Chapter IX. "Methods of Determination of Errors of Refraction and Accommodation." We regret very much that in this chapter we find much to criticise adversely as to methods employed, and shall be obliged to call attention to several gross errors of statement. After speaking of Placido's disk as a means of determining astigmatism, Dr. Oliver says: "If more accurate objective study as to the angle and the degree of corneal astigmatism be

desired . . . the so-called *ophthalmometer*—more correctly *keratometer*—should be brought into use. Unfortunately, however, its great cost, the difficulty of accurate adjustment to most students, and the discrepancy in its answers when incorrectly used seem to hinder it in some degree, in its present form, from being more generally employed in ordinary clinical work."

Then follows a half-page illustration of the Javal and Schiötz ophthalmometer of 1889 in a first edition text-book published in the middle of 1893. Why not figure the more recent instrument with the more complete illuminating electric-light attachments? After describing the ophthalmometer and the plan of its operation, the author concludes the paragraph as follows: "If the aërial images in the tube separate in the vertical meridian, this meridian has the shorter radius, whilst if they overlap in this meridian, it has the longer radius." Now, he is so clearly in error that the least observant can see it at a glance. If you approximate these reflectors in a less curved meridian and then turn them to a more curved meridian of the cornea they *cannot separate*, but must *overlap* in order to be reflected from the cornea. Unfortunately, this grave error is emphasized as correct when applied to the 1889 model, as seen in a footnote on p. 258. All of the Javal ophthalmometers work on the same principles. On the same page we also note reference to Davis, who is quoted by Dr. Oliver as follows: "Davis says that the so-called 'primary position,' or position which represents that point at which the transverse lines of the reflectors become continuous, is the first to establish. To get this position properly and systematically he places the long white pointer horizontally. If the lines are coincident the primary position has been obtained. If not, the tube is to be revolved from right to left, for about forty-five degrees, and the same distance from left to right, thus causing the pointer to travel about forty-five degrees above and below the horizontal meridian." What Davis really says is: "To obtain the primary position first turn the long indicator to 0°; if the transverse lines are coincident at this point go no further—that is the primary position. If not coincident at the zero point turn the tube from right to left—that is, the long indicator from 0° to 135°; if the transverse lines do not become coincident before or when 135° is reached go no further in that direction, but turn back to zero, turning this time from left to right toward 45°; the lines will necessarily become coincident before 45° is reached. The primary position is never further than 45° on either side of zero degrees."

Further errors in quotation from Davis are noticed, as: "Davis says astigmatism with the rule may be written 2. D. 90° + or 180°; and astigmatism against the rule, 2. D. 180°+ or 90°." When correctly quoted it should be "astigmatism with the rule 2. D. 90°+, or 180°—(minus); astigmatism against the rule, 2. D. 180°+ or 90°—(minus)." We trust that these mistakes will be corrected in the next edition.

We were at a loss to know how such errors as those pointed out could occur, if the author was in the daily habit of using the ophthalmometer; but we find the solution of the difficulty, for on turning the page to the next chapter, which treats of the "Correction of Errors of Refraction and Accommodation," we read: "Having, then, assumed that a mydriatic is to be employed, the next point is, What one shall be used?" Again, "Although these plans may often result in patients seeking advice from others who may rest content with an imperfect correction of some

manifest error, yet in all such instances it is far more than equivalent recompense to know that the steady, quiet reputation of many years of but little error in refraction-work is infinitely better than the flash-like brilliancy of the moment in quickly giving corrections that may or may not be right." We are informed that atropine "will not be necessary in aphakia."

This whole chapter shows that the author is in the habit of using atropine as a mydriatic in all cases of error of refraction, even in the aged, for he says: "These latter cases may frequently be fairly well estimated with an extremely weak and evanescent solution of one of the drugs sufficiently repeated to make almost certain the result." We certainly do not have to resort to these methods in our practice, and our citizens are fairly well spectacled. We are particularly well pleased with the section dealing with the ocular muscles and the numerous tests for the detection of muscular insufficiencies.

Part II., *Diseases of the Eye*, by Dr. Norris, is embraced in three hundred and forty-one pages. His style is pleasing and particularly clear, although at times we find fault with him for not saying enough on a given subject; it is probably for a good reason. Chapters on diseases of the conjunctiva and cornea treat of these in the usual way, and nothing specially new is added.

Chapter XV., "Diseases of the Sclera." All that the author has to say on this subject is told on one page, when we think much more might have been added.

Then follow Chapters XVII. and XVIII., "Accommodation" and "Errors of Refraction." It is easy to see here that the senior editor is also imbued with the idea that no error of refraction can be properly corrected without the use of a mydriatic. In reference to the ophthalmometer he says: "However, the results obtained by it have usually failed to agree accurately with those arrived at by the use of test lenses."

The chapters on internal diseases of the eye are all good, but call for no special comment. Particularly full and interesting is Chapter XXIV., "Glaucoma." We fail, however, to notice any reference to the use of eserine sulphate as a means of treatment independent of iridectomy; we certainly believe many acute attacks can be cut short by the use of eserine alone.

The succeeding chapter, "Affections of the Eye Muscles," is exceedingly interesting and the plan of treatment advised orthodox and to be followed by all practical surgeons.

Chapter XXIX., and last, "Operations on the Eye," is well illustrated and the text fairly full. Antiseptic surgery is advised in its practical form and not as a fad, and all of the operations detailed are of the most modern. Especially clear are the remarks on "Ectropion," and with the numerous plates presented make the subject full in every particular. Dr. Norris, in speaking of "graduated tenotomy," says: "That it is difficult to accurately foresee any desired effect is evident from the number of times that even experts in the method are obliged to repeat the procedure." This hits the nail on the head—they do not know, but attack one muscle after the other. We are glad to see the author's idea so clear on this subject.

All that is said on the subject of extraction of cataract we can cordially commend and are fully in accord with; it is safe and good teaching. An

index and full set of test-letters conclude the volume. The work is gotten out by the publishers in very good form and makes an attractive-looking volume. We shall look soon for a second edition, when any defects pointed out may be corrected. W. O. M.

ÉTUDES DE CHIRURGIE MÉDULLAIRE. Par A. CHIPAULT. 8vo., pp. vi., 403. Paris: Felix Alcan, 1894.

STUDIES IN SPINAL SURGERY.

IT is not often that one comes across such a treasure-house as this admirable book on Spinal Surgery by the well-known French surgeon. Those who have read the *Revues de Chirurgie* and *de Neurologie*, as well as other journals, know very well the many contributions to surgical literature, especially to that of the spine, which he has already given to the public, but it is still a surprise to see how complete this portion of the work in question is, and especially will be when entirely finished. This is the first part of a work to be completed in either three or four volumes. The present volume includes the History, Technique, and Indications. The second, now in press, treats of the Diagnosis of Spinal Lesions, and the third, and possibly a fourth, will take up, in detail, Fractures, Pott's disease, Spinal Fistulæ, Tumors, Spina Bifida, Curvatures, etc.

The author has none of the national seclusion which is so frequently characteristic of French writers. One sees constantly books from which it would be supposed that surgery began and ended within the boundaries of the French Republic, but in the present work not only are German and English authors constantly quoted, but all the well-known American surgeons appear in its pages. There seems to have been hardly even the Transactions of an American State Medical Society that he has not searched and extracted all of value in it. So far as the reviewer is aware, no important case and no important paper from an American author has been overlooked; and strange to say, the only misprint of an American name (p. 155) is that of McCosh, who appears as "M. Cosh." The illustrations also are admirable, and are taken freely from foreign as well as French authors. On p. 30 he figures a dural needle identical with one devised some years ago by the reviewer (Buck's *Reference Handbook of the Medical Sciences*, vol. viii. p. 210), but abandoned in favor of the smallest Hagedorn semicircular needle.

He points out and illustrates by a good woodcut (Fig. 13) that the posterior surface of the bodies of the vertebræ can be reached by drawing the spinal cord aside, and it is probable that in view of the elasticity of the roots of the spinal nerves operators have often been too timid in thus displacing the cord by suitable retractors.

In cases of vertebral abscess he approves very strongly of Treves' method in the lumbar region, which in fact has now become, one might say, classic. In the dorsal region he quotes the bold, and almost rash, proposal of Vincent for trans-somatic vertebral and pre-medullary drainage, and in the cervical region gives his hearty approval, as seems just, to the antiseptic method of reaching a post-pharyngeal abscess by an incision along the anterior or posterior border of the sterno-cleido-mastoid muscle, rather than through the mouth.

For the treatment of hydrocephalus by indirect drainage through the spine, he proposes, and with a certain amount of reason, puncture of the spinal envelope at the lumbo-sacral junction, between the fifth lumbar and the first sacral vertebræ, instead of that of Quincke, between the third and fourth. Parkin's more recent method for the relief of intra-cranial pressure by the withdrawal of cerebro spinal fluid from the basal sub-arachnoid space (*Lancet*, July 1, 1893) is not included in this chapter, since it was published undoubtedly too late to be included. Not only has he gathered together a large number of cases, but he has evidently studied them with care and good judgment, and with his conclusions we can rarely differ.

Thus in fractures implicating the cauda equina, his conclusions are: "1. In fractures of the lumbar or sacral vertebræ, with irreducible displacement of the fragments, immediate interference should be the rule. 2. In fractures reduced spontaneously or by surgical manipulation, wait. If the course of the accident is progressively toward health, abstain from intervention. If the case is stationary, intervention by the end of the first month is proper; not earlier, for the restoration of function cannot begin before this period; not much later, since incurable degenerations of the spine may be established" (p. 71). In the cauda equina he also rightly advocates suture of the nerves if it be needed. And again: "In complete fractures of the vertebræ with persistent compression of the cord between the body and the lamina, surgical interference has only resulted beneficially when it has been made very early, and in traumatisms of the inferior part of the spine and not its superior portion, and also in case the cord has simply been compressed and not destroyed" (pp. 102, 103). And again, in fractures of laminæ at any level, lamnectomy (as, following Lloyd, he proposes to spell it) is to be done, with the removal of any extra-dural clots.

Following this chapter on traumatism is a table of one hundred and sixty-seven cases of lamnectomy in fractures, and a second table of eight cases of surgical operations other than lamnectomy in fracture, and a third of one hundred and four cases of surgical interference for gunshot wound, practically covering all the modern literature of these cases.

In Pott's disease with paraplegia, his conclusion is that surgical interference should be much restricted. The results have been far from giving that which had been hoped, and he would restrict it to special and rather rare varieties of pathological change, such as paraplegia from cold abscess, from direct compression of the medulla by granulation tissue, and paraplegia with perimeningitis, which has resulted in a permanent sclerosis. In addition to this restriction, the contra-indications from bad general health of the patient, from the extent of the osseous lesion, and intra meningeal tubercular infection, should ever be borne in mind. Following this also is a table of fifty-nine cases of operation in Pott's disease without paraplegia, and another of one hundred and three cases of lamnectomy in Pott's disease with paraplegia.

Of spinal tumors he gives a table of twenty-two cases which have come to operation, and his conclusions are in favor of operation in case the disease is not malignant or disseminated; but he promises in a future volume to enter into this matter much more fully.

Following these chapters are some interesting observations of varied character, including one excellent case of his own (p. 367) of osteomyelitis of the body of a lumbar vertebra, with complete and durable

cure resulting from operation. To the intra-spinal resection of the nerve roots he gives a guarded approval, based on the very few cases thus far recorded, two of Abbe's, two of Horsley's, and one of Bennett's.

The book has one characteristically French, and very grave, defect; there is a table of contents, but *absolutely no index*. We are constantly surprised at the neglect of French authors to put in any indices whatever. German and especially English and American books have full indices, so that one can refer instantly to any topic, and very frequently, especially in German books, to the remarks or cases of any author; but to find a French book with an index is a rare pleasure. Each volume of this series, being issued separately, should have an index, and we especially urge that when the work is completed there shall be a full and complete index of all the volumes. W. W. K.

SYLLABUS OF LECTURES ON THE PRACTICE OF SURGERY, ARRANGED IN CONFORMITY WITH THE "AMERICAN TEXT-BOOK OF SURGERY." By N. SENN, M.D., Ph.D., LL.D. Pp. 221. Philadelphia: W. B. Saunders, 1893.

THIS excellent little Syllabus of Surgery is intended more especially for teachers and students. The idea of the author is that the teacher will find it useful as a skeleton for his lectures, and the student as a series of headings from which he can quickly refresh his mind in preparing for a quiz. The author has added a few facts, names of authors, and operations.

The book is imperfect in one respect, that it does not cover all of the American Text-book of Surgery; the first part, which treats especially of the Principles of Surgery, being excluded. We hope this defect will be remedied when another edition is called for, as it undoubtedly will be. The work is certainly one involving great labor, and at the same time is extremely clear, both by its mechanical arrangement and its textual exactness. Those who use the American Text-book of Surgery as a text-book will find it very useful. W. W. K.

THEORY AND PRACTICE OF MEDICINE. By JAMES T. WHITTAKER, M.D., LL.D. 8vo., pp. 821. Wm. Wood & Co., 1893.

THE keynote of the book is *infection*. From the dedication to Robert Koch, "founder of bacteriology," and to George M. Sternberg, "pioneer in the study of parasitism in this country," through the whole of the subject-matter sounds the one tone. The author promises in the preface that morbid anatomy shall receive but little consideration, and keeps his promise well. Treatment, too, does not have much attention as compared with the study of the causes of disease.

The volume is one of 821 pages, including the index. It is well printed on good paper, and is provided with 300 excellent illustrations and a colored plate. It is impossible to review all the sections in detail,

even were it desirable, and we must confine ourselves chiefly to the plan of the book and the methods of handling the subjects which the author adopts.

Contrary to the arrangement common in text-books of medicine, the first portion is devoted to the ectozoa and the entozoa. These two chapters are particularly interesting and instructive, and the illustrations, so needful in the description of parasites of this kind, are extremely satisfactory.

After a short article upon bacteria are two chapters upon the infectious diseases. The section upon diphtheria, although short, is very complete. The author revives the etymological signification of "typhus," and describes typhoid, typhus, and recurrent fevers as subdivisions under the general heading of "the typhus fevers," although, of course, regarding them as distinct diseases. We are pleased to see that he condemns all forms of specific treatment for typhoid fever hitherto tried.

It is, perhaps, straining the state of our knowledge on the subject to place rheumatism and quinsy among the infectious diseases, except in so far as the latter is a suppurative process, which it is not always. This finishes Part I. of the book.

Part II. is devoted to diseases of the organs. Diseases of the mouth are much too briefly treated, considering the importance of the subject. The section on diseases of the stomach contains in a limited space a very excellent account of gastric affections. The condensation has been admirably done. We notice that the author rejects Ewald's use of the term "gastritis," choosing rather the title "gastric catarrh." This seems to us a step backward, since the catarrhs of the stomach are really gastritis as viewed from a pathological standpoint.

The remarks on the treatment of appendicitis are sensible and timely. We commend them to the consideration of those whose views upon this subject have become either all surgical or all medical.

Under diseases of the respiratory apparatus, bronchitis in its various forms is well handled. The author retains the title, capillary bronchitis, contrary to the view of many writers on the subject, which seems to us the correct one. Croupous pneumonia is included among the infectious disorders in the first part of the book, and catarrhal pneumonia among the respiratory diseases. This is somewhat confusing, especially, too, when we remember that a large proportion of the cases of catarrhal pneumonia are tubercular in nature, and consequently to be classed with the infectious disorders, although the symptoms of these cases cannot be distinguished from those of non-tubercular form. It would scarcely answer to describe in different parts of the book conditions which are clinically so identical; and the wide separation of croupous and catarrhal pneumonia seems equally ill-advised.

Remarks on drowning are included in the section on respiratory diseases.

What the author writes on diseases of the organs of circulation, of the blood, and of the genito-urinary apparatus is for the most part good. The classification, however, is confusing. Exophthalmic goitre and myxœdema are included in the first class, although it is doubtful whether they belong there. Gout and arthritis deformans are put down as diseases of the blood, although rheumatism is included among infectious diseases. Rickets and obesity also go under blood diseases, but diabetes mellitus and diabetes insipidus under genito-urinary affections, where they do not seem to belong.

The last portion of the book, that upon diseases of the nervous system, includes remarks upon poisoning by opium, cocaine, and nicotine, and a section upon congelation. The ordinary subjects of this department are, of course, contained in the work. The vastness of the subject and the limitations of the book make many of these latter articles rather sketchy.

Few tasks can be more difficult, with the constantly increasing amount of medical knowledge, than that of writing a text-book of medicine in a single volume without slighting any of the subjects contained in it.

Dr. Whittaker is an able writer and a careful worker, but his acknowledged method of approaching his subject is one-sided, and renders the book one which cannot be recommended to medical students or to physicians who wish to depend upon it as their chief guide. There is, too, a disposition shown to ignore statements of others which do not accord with the author's own views. For instance, no reference whatever is made to iron in the liver, or to the reddened marrow of the long bones as seen in pernicious anæmia. Then, too, it gives a wrong impression to say, *ex cathedra* and without a qualifying statement, that the chief cause of chlorosis is connected with some disturbance of ovulation, since this is far from being generally admitted.

Again, pseudo-leukæmia, which is described in nine lines, is not always believed to be "essentially the same" as leukæmia. Gout is described as though it were purely an affection of the joints, and no more than an implied reference is made to the various other ways in which it may affect the system. Phosphorus is referred to as though it were a certain, unfailing specific for rickets, and no allusion is made to the fact that this is a greatly disputed point, with certainly as much evidence against it as for it.

Yet the book is a good one, and we can heartily recommend it as a work of reference. Our criticisms are made in no censorious spirit, but because we feel that a text-book for students and younger practitioners should teach that which is most generally accepted rather than that which is more of an individual opinion. A little changing and filling in here and there in a second edition will make the volume all that can be desired. C. G.

A Handbook of Ophthalmic Science and Practice. By Henry E. Juler, F.R.C.S. With illustrations. Second edition. Philadelphia: Lea Brothers & Co., 1893.

Mr. Juler's *Handbook of Ophthalmic Science and Practice* has been well and favorably known since it appeared, about nine years ago. One of the marked features in the first edition of the work—its liberal number of illustrations—is continued and elaborated in the second with two hundred and one woodcuts, a number of chromo-lithographic plates, and twenty-four reproductions of photo-micrographs. A few of these—for example, Fig. 37, representing a corneal cicatrix—are fairly representative of the lesion which they are intended to illustrate; but many are of indifferent value. It is greatly to be regretted that handsome work in photo-micrography loses so much in reproduction, the chief fault

being the failure to portray detail of the structure. A student endeavoring to learn the histological appearances of the normal cornea from Fig. 30 would be possessed of ideas as hazy and indistinct as is the cut from which he would try to obtain them. It really seems, until we find a better method for reproducing photo-micrographs, that it would be more satisfactory to retain drawings, even if these were diagrammatic.

The new material in this second edition is considerable, amounting to nearly one hundred pages, and there is scarcely a subject which has escaped careful and satisfactory supervision. Occasionally, however, we are struck with the omission of certain interesting ophthalmic topics—for example, retinal changes as the result of direct sunlight, traumatic amblyopias, or retinal concussion, and the meagre consideration of toxic amblyopias, among which tobacco and alcohol are practically the only ones receiving attention, and even in these, although the clinical side is well represented, there is no description of the pathological anatomy of the affection or of the interesting relation of the bundles of the optic nerve, such as the papillo-macular fibres, to the development of variously-placed scotomas in the visual field.

Some liberty, probably the fault of proof-reading, is taken with the names of authors. Our own accomplished New York ophthalmologist, Dr. Weeks, appears as Wecks, and in the somewhat unwieldy name of Wickerkiewicz the last c is substituted by a t, while Schneller appears as Schweller.

Affections of the eyelids, introduced with a good account of the anatomy and physiology of the palpebræ, is a satisfactory chapter in the main, although separation of the varieties of blepharitis into those which are eczematous, seborrhœic, etc., would be preferable to the consideration of the subject under one heading.

Diseases of the lacrymal apparatus are discussed in a brief chapter —too brief, perhaps, considering the stubborn character of many of the affections and their relation to intra-nasal surgery.

There is a good classification of inflammations of the conjunctiva, and under "granular lids" we find, in addition to the ordinary medicinal applications, some reference to the modern surgery, or rather, the modern modifications of surgery applicable to this disease. Darier's method is described and recommended as better than galvano-cautery applications, but there is no mention of Knapp's forceps, nor description of any of the varieties of the operation of expression. While it is true that pinguicula ordinarily causes no trouble or inconvenience, yet in the light of the researches of Fuchs, its relation to the development of pterygium, and the relation of this lesion to operations on the eye and to changes in the curvature of the cornea, should receive more direct mention.

Diseases of the cornea are well discussed, and with the exception of a failure to include the researches of modern times, particularly those of Leber, in regard to infectious keratitis, are clearly, easily, and practically considered. The optical treatment of conical cornea is referred to, but in this, as in other books, scarcely enough attention is paid to its value. In view of the experiences of Thomson and Wallace as to the improvement of visual acuity possible with strong sphero-cylindrical combinations in certain cases, it is well to impress the student that he should not lightly turn down a case of this kind as unsuited to optical therapeutics before, with shadow-test, ophthalmometer, and careful test-

ing with the trial lenses, he has endeavored to raise, as he often may, the visual acuity to an unexpected sharpness.

Diseases of the iris, ciliary body, and choroid, are considered in Chapter VI., and are well described, several new varieties of iritis receiving considerable attention. Sympathetic irritation and sympathetic ophthalmitis are very properly considered as separate affections, and the dangers attendant upon the last-named disease are fully impressed. Mr. Juler is not willing to commit himself to any theory of the mode of production of sympathetic disease, or the path of the morbid process. He believes that "the known facts about the occurrence of sympathetic ophthalmitis are hardly yet sufficient to establish a theory as to its mode of transmission." This chapter is illustrated by many useful chromolithographs and satisfactory woodcuts.

Chapter X., on color vision and its defects, is written by Mr. Adams Frost, and is an exceedingly satisfactory description of the subject, illustrated by a colored plate of the tests for color-blindness after Holmgren.

There is a good, well-illustrated chapter on the crystalline lens and its diseases. Mr. Juler adopts, in suitable cases, the following incision for extracting cataract: "The puncture and counter-puncture are made in the sclerotic at 1 mm. from the edge of the cornea and 3 mm. below its upper tangent; the knife is brought out through the sclerotic immediately above the cornea." Evidently a similar incision is practised in the operation without iridectomy, for we read: "The incision is made in the same way as in the former operation." Perhaps this accounts for his opinion of simple extraction, somewhat vaguely summed up in the following paragraph: "This is not the place to discuss the points in favor of or against such a procedure, beyond mentioning that optical results without iridectomy are decidedly better should the operation be successful; but the liability to anterior synechia, prolapse of the iris, involvement of iris in the cicatrix, with irido-cyclitis, is sufficient to raise doubts as to which is the better procedure." So, too, he prefers not to commit himself as to the propriety of instilling eserine before and after operations for cataract, being content to state that some surgeons instil it and some do not. Irrigation, or washing out of the anterior chamber is recommended when careful toilet of the wound has failed to rid the anterior chamber of the remains of lens-matter. The author's experience is that harm does not attend this practice and that its value cannot be doubted—this in spite of the fact that he uses boiled distilled water, although the researches of Mellinger have shown that even this fluid is capable of originating opacities in the corneal endothelium.

No one can accuse Mr. Juler of allowing undue liberty to his cataract cases: Both eyes are bandaged, the patient put to bed in a darkened room, and the bandage not permanently removed until the twelfth day. In combined extraction the eye, other things being equal, is first examined on the third or fourth day; in simple extraction, inspection of the eye is considered imperative on the morning after the operation, and if there is prolapse, immediate iridectomy, because he believes that delay is almost certain to result in plastic iritis, and the entanglement to lead to recurrent iritis and to danger of sympathetic ophthalmitis. It is interesting in this connection to recall Knapp's experiences: Prolapse, recognized within a few hours of its occurrence, is cut off; prolapse found after the third or fourth day is not touched; if small it may

disappear, if large no operation is done until the eye is quiet, when the protrusion is amputated, and usually prompt recovery follows.

Although it is evident that Mr. Juler appreciates the value of aseptic surgery in its relations to ophthalmic operations, it is to be regretted that he has omitted specific directions for the preparation of patients, instruments, collyria, and dressings.

The chapter on refraction of the eye is written conjointly with Mr. John Griffith. In the former edition Mr. Adams Frost assisted in this work. It is a good chapter. The illustrations are clear and to the point, and although we do not agree with Mr. Juler that mydriatics are unnecessary after the thirtieth year, this is one of the many questions in ophthalmology which remain for the future to settle. The old numeration of prisms alone is considered, and there is no description of the centrad, the prism dioptry, or the large amount of work which recent times, and especially American industry and intelligence, have brought to bear upon this subject. Dr. Stevens's nomenclature of the insufficiencies of the ocular muscles is referred to; esophoria and exophoria are described, but, curiously enough, there is no mention of hyperphoria, and, we are glad to say, none of the so-called graduated tenotomies. The ophthalmometer of Javal finds place, but the old model is figured and the description of its value as an aid in detecting astigmatism is not very clear or practical.

A few defects have been mentioned existing in this work which, taken all in all, is one of the best in the English language. Mr. Juler has produced a text-book which we feel sure is bound to continue to receive recognition and to go through other editions, each one of which will make it more perfect than the last. We heartily commend it, and congratulate the author and those who have been associated with him in the preparation of this second edition. G. E. DE S.

A MANUAL OF DISEASES OF THE EAR. By GEORGE P. FIELD, M.R.C.S., Aural Surgeon to St. Mary's Hospital, etc. Fourth edition. Philadelphia: Lea Brothers & Co., 1893.

THIS compendious and well-illustrated volume of 371 pages is a natural follower and later development of the works of Toynbee and Hinton, well worthy of the popularity indicated by the exhaustion of the 3000 copies of the third edition. It shows pathological and literary research on the part of its author, not of the extreme sort which traces facts or statements beyond those citing them to their primary origin, especially if in untranslated German works; but the data are generally accurate and well enough authenticated, and it is refreshing to get away from the usual recurring quotation of German authorities. More important still is the distinct impression of the writer's personality in his frank statement of his own experience and his keen but ingenuous analysis of his facts. He plainly aims to furnish to others a guide from the teachings of his own practice rather than to construct a treatise of logical, but forced, completeness. This personal and British flavor of his book is not spoiled, as in some similar works, by evidence of insular prejudice and ignorance.

The general arrangement is systematic and fairly proportioned. The thirty-two pages devoted to the anatomy are clear and generally satisfactory, although the old errors are perpetuated in such statements as "The tympanic membrane slants somewhat . . . its surface looks outward and slightly downward and forward," which gives no true idea of the nearly horizontal position of the drum-head so manifest in the infant skull or that of the adult when similarly opened to view. After chapters of ten pages each, on the physiology and on the examination of patients—both showing mild skepticism as to the more hypothetical and fine-spun matters often set forth—the clinical portion begins with a good statement of the diseases of the external canal. He follows Toynbee in writing of "sebaceous or molluscous tumors" as arising in the meatus, sometimes involving and hollowing out the bone and even extending in to penetrate the cranial cavity. These are surely cholesteatomatous growths or collections forcing their way *out* from the cavities of the middle ear ten times as often as sebaceous cysts, such as he considers them. His teaching as to the danger of using any instrument other than the syringe for the removal of wax-masses or foreign bodies, is as vigorous as it should be; but the temperature of 100° for the water is generally too low and less efficient than 110° to 115°.

His fifth chapter, of nearly thirty pages, is devoted to a good statement as to the osseous tumors of the meatus and their operative removal. This is a matter in which his experience has been exceptionally rich, as witness more than a hundred operations on cases carefully selected from a much larger number Private practice furnished almost all of them, for he says: "In common with other aurists, I have found the occurrence of an exostosis among hospital patients to be an almost unique phenomenon;" and constant bathing, especially in salt water, is charged with the production of the majority of them. Exostoses demanding operation are so rare outside of England that American readers are most concerned with his sage advice as to the forms which should be let alone.

After a brief chapter on affections of the auricle he takes up acute middle-ear inflammation, which he treats more often by hot douching and gentle Politzer inflation, with leeching in the worst cases and paracentesis when pus is diagnosticated and not soon dissipated. In the chronic non-suppurative disease the numberless measures employed in the nose, pharynx, and ears are well set forth, with little stress upon Hinton's plan of incising and syringing through the drum-head. The importance of post-nasal adenoid hypertrophies and the need of operative removal of enlarged faucial and pharyngeal tonsils, when less radical measures give only partial relief, are clearly stated, but he deprecates very zealous nasal surgery. Intra-tympanic injection of fluid per catheter has given very good resnlts in his hands, the medicament being carefully selected in accord with the condition indicated by auscultation and the appearance of the drum-head. In this connection should be mentioned the dozen colored plates of the tympanic membrane, which are effectively framed-in by the recurring picture of the auricle and speculum. The long axis of the oval of the speculum is nearly at right angles to that of the canal, in a position in which the speculum should not be used; and perhaps for this reason our prime landmark—the short process of the malleus—is hardly ever shown. That any of them are moderately good, marks the overcoming of very notable difficulties in this sort of illustration.

Operative intervention for catarrhal deafness finds little favor with Mr. Field; but his skeptical attitude seems partly due to a distrust which has restrained him from essaying it in many of its forms, and thus demonstrating its limited value. In spite of some disclaimer, he seems to regard a perforation as a certain impairment of the hearing, the artificial drum-head as valuable as a vibrator, and the removal of the stapes as nearly inevitably destructive of the hearing—points sufficiently disproved by modern workers, although they have failed to convince the profession of the value or the full safety of the latter procedure. In suppurative disease he regards caries as a clear indication for operation, by excision of ossicles, curetting of walls, laying open the attic and antrum from the meatus, or the opening of the mastoid. The trephining of the mastoid is fairly described, in terms that suggest that the author has rarely done it, except in enlarging a pre-existing sinus; and the dental engine is the instrument preferred because of the absence of jar.

The intra-cranial complications are treated in a chapter of nearly thirty pages, which deals with the British operative and statistical work upon the subject, and contains much of sage insight into the difficulties and uncertainties of diagnosis. A good chapter on pain in ear-disease is followed by those on affections of the internal ear and on tinnitus, in which the pilocarpine treatment is rather strongly advocated and the use of electricity as advised by Brenner. Then at the close, except for the brief chapters upon deaf-mutism and artificial aids to hearing, the author reviews the pathology of ear-disease in an excellent, comprehensive chapter, which gathers up many of the links, before but loosely joined in his informal discussion of the various topics, in a way that epitomizes and reiterates much of what has gone before. Placed in this final position, where the student who has gained some understanding of the details of otology from the very readable preceding sections is prepared to receive it intelligently, such a summary is likely to fasten much of the author's teaching in the mind, to simplify and unite the subject as a whole, and thus to stir the reader to renewed and increasing interest.

B. A. R.

A Treatise, Practical and Theoretic, on Cancers and the Cancer-Process. By Herbert Snow, M.D. (Lond.), etc., Surgeon to the Cancer Hospital. Pp. xiii., 384. London: J. & C. Churchill, 1893.

Dr. Snow is already widely known through his contributions to the literature of malignant disease, considered from both a clinical and a theoretical standpoint. His connection with the oldest hospital devoted to this special branch of surgery has given him unusual opportunities for studying it. Under the term "cancer" the reader should bear in mind that he includes also the various forms of sarcoma. The scope of the monograph is clearly outlined in the preface, in which the author states that it is divided into three portions, the first being devoted to classification and general considerations, the second to structural anatomy and the "clinical career of particular species;" the third to the peculiarities of malignant disease affecting different organs, with a review of the proper therapeutic measures. The main object aimed at is stated to be

"to make clear *principles and laws*, rather than to rest content with chronicling bare facts."

Part I., containing nine short chapters, includes a general discussion of the etiology and phenomena of malignant disease. It is based largely upon the author's previous writings, and is filled with interesting and suggestive facts and deductions.

Chapter I., on the nature of cancer, concludes with a denial of the parasitic theory. "Cancer," it is affirmed, "is not introduced from without, but is the product of agencies within; no microbic parasite is to be sought, but the cell-elements of the body, under the influence of some mysterious force, themselves become autosites." The phenomena of *erosion*, together with *infectivity* of the cell element, are the distinguishing characteristics of malignant disease. The possibility of the existence of a specific microbe is denied at the outset from the entire absence of proof. The author affirms that there is no authentic instance of the transmission of cancer by contagion.

The general denial of the constitutional origin of cancer is offset by the statement that "we note as a common clinical fact the purely local character of all the early manifestations, with what is also a matter of everyday experience (?), the generation of carcinoma solely by distress of mind." It is certainly wise (as the author remarks) that the explanation of this phenomenon should be left to "a future generation," who will doubtless find it a hard nut to crack.

The influence of heredity, climate, and food is dismissed as an erroneous idea, while it is shown that with advancing civilization malignant disease is steadily on the increase—a fact attributed by the author to the less robust physique of the present generation, an argument which will hardly be convincing to those who have studied the development of the disease among our foreign population, where the author's favorite neurotic theory loses its force.

Part II. deals with the varieties of carcinoma and sarcoma, including their morbid anatomy. Sarcoma is defined as "cancer originating in the cells (corpuscles) of the connective tissue." "Lympho-sarcoma" and "lympho-carcinoma" are regarded as synonymous terms.

Part III., on cancer in special organs, is introduced by two general chapters on diagnosis and treatment. An italicized sentence under the latter head is worthy of remembrance, viz.: "For every surgeon who is called on to perform an operation for cancer it should be a maxim that *with such a measure the proper treatment of the case is only commencing.*" This is advice which the surgeon would do well to bear in mind in his estimate of the permanent results of operations for malignant disease.

The early use of opium is strongly advised, since the author holds that aside from its analgesic effects, the drug actually "appears to exert a direct and conspicuous retardative action, materially checking the cell-growth in both the primary tumor and in secondary metastases."

A number of beautifully colored plates are found at the end of the volume, also a valuable appendix and carefully prepared index and table of authorities. The book contains a large number of interesting clinical facts, the results of the author's personal observation and collation, and though the reader may not always agree with the deductions which are made, he cannot withhold his admiration at the ingenuity and originality with which the arguments are presented. As a speculative treatise on malignant disease it is worthy of careful perusal.

H. C. C.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,

PROFESSOR OF CLINICAL MEDICINE AND THERAPEUTICS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; ASSISTANT VISITING PHYSICIAN TO BELLEVUE HOSPITAL.

PYRIDINE.

DR. BLANC presents a careful study of this singular alkaloid. Possessing the formula C_5H_5N, it is a colorless, very fluid substance, of an excessively penetrating odor. Soluble in water and in alcohol in all proportions, it also yields crystalline salts which are, as well, soluble in these liquids. If inhaled in small doses it produces slight somnolence, headache, with congestion of the face and sometimes a little vertigo. The inspiration acquires a remarkable amplitude, the blood pressure diminishes, and there is a general vasodilatation. The excito-motor power of the medulla and spinal cord is profoundly changed, in that their excitability is calmed. The bronchial secretion is somewhat increased. Its absorption by the air-passages is rapid, and its elimination by the urine almost equally so, for it is complete within fifteen minutes; it is also eliminated by the lungs, the glandular apparatus of the digestive tract, increasing the gastric secretion, and thus exciting the appetite and favoring digestion. This rapid elimination permits the use of enormous doses with perfect safety. It has also some antiseptic properties, and since it is not irritant, it can be used, as has been shown by Jullien, in from one to ten per cent. solution, in the treatment of urethral blennorrhœas in the male and female. Its most important use, however, is for the treatment of asthma and emphysema. Adopting the theory of Sée, that the former is a neurosis whose seat is in the medulla, in a state of excitability, reflex from very diverse peripheral irritation—pneumogastric, trifacial, even olfactory—and acting upon the motor nerves of the inspiratory muscles, particularly the diaphragm. Under the influence of this drug the respiration becomes free, the expectoration more fluid, and loses its purulence and foulness. Auscultation determines that the sibilant râles disappear and are replaced by the mucous ones. Even in cardiac asthma the remedy is preferable to morphine,

although for continued relief the treatment must be based upon iodide of potassium. It is useful in angina pectoris, because its vaso-dilating effect extends to the coronary arteries, and it should be used by inhalation for fifteen minutes each morning and night. Daudier has reported benefit from its inhalation in subacute traumatic tetanus. Although it is best used by inhalation for twenty minutes from a napkin upon which is poured several drops, it can be administered by the mouth in capsules. If used for urethritis, a tampon moistened in a one to ten per cent. aqueous solution can be applied to the meatus, or an injection of the same strength can be administered.—*Revue de Thérapeutique Médico-chirurgicale*, 1894, No. 1, p. 20.

[Although we have used this remedy with brilliant success in several cases in which the symptom of asthma demanded immediate relief, we have never been able to induce a patient to inhale it for a second attack because of its abominable, penetrating, and lasting odor.—R. W. W.]

Freezing the Vagi for Asthma.

Dr. Ernest B. Sangree, having made a patient comfortable by the use of one-half drop of a one per cent. solution of nitroglycerin every half-hour, found that when the remedy was exhausted the attack immediately regained its former severity. If the remedy was continued the patient could not lie down and was able to obtain only a few minutes of fitful sleep. Small pieces of ice wrapped in a towel and applied over the course of the pneumogastric in the neck was successful within five minutes in relieving the attack.—*The American Therapist*, 1893, No. 5. p. 143.

The Treatment of Infectious Bronchitis.

Dr. Henri Huchard divides these cases into three classes: 1. The infection takes place from contagion, that is, by direct contact of microbes already virulent; then isolation is necessary. 2. The infection takes place by exaltation of the virulence of microbes pre-existing in the upper air-passages; here it is necessary to attack early and energetically the fermentations of the mouth, which so frequently exalt the virulence of the streptococcus; for example, frequent washings of the mouth with solutions of boric acid, carbolic acid, or resorcin. 3. In the bronchi the microbes of suppuration or putrefaction exalt the virulence of the streptococcus; here it is necessary to obtain bronchial antisepsis by means of creosote, eucalyptol, camphorated guaiacol (guaiacol, 5; camphor, 20; sterilized oil, 100); the creosote in oil (1 : 15), and the camphorated guaiacol are used subcutaneously. If the infection has done its work, with the camphorated injections those of ether or caffeine should be used in addition.—*Revue gén. de Clinique et de Thérapeutique*, 1893, No. 42, p. 659.

The Treatment of the Fever of Phthisis.

Dr. Savigny distinguishes three forms in this disease: 1, the initial or continued; 2, the hectic or concomitant; 3, the septic. In the last form the purely symptomatic treatment is powerless. The administration of the new antipyretics is not favorable, for all of them diminish the energy of the

heart, only influencing the fever as a symptom, if indeed they have any notable effect, and they are only used in rapid tuberculosis, and when humanity demands only that the patient shall be made more comfortable. Hochhalt, after much research, has come back again to arsenic, but with the exception of recent initial apical catarrhs it has no influence upon the course of the disease. Hectic fever is manifestly influenced by this remedy, but it has no action upon the initial fever and upon the rapid forms of phthisis. Fowler's solution is recommended, in commencing doses of one to two drops, and increasing, day by day, to five or six; rarely more, for ten drops is quite likely to produce symptoms of poisoning. Other beneficial effects besides the lowering of temperature are the suppression of night-sweats and an increase of appetite and body weight. The continued fever offers considerable resistance to the treatment by arsenic, for this fever is a manifestation of caseation, and is an expression of the clinical form of *phthisis florida*. By building up the system one can best combat the tendency to caseation. In these cases the condition of the heart and circulation is important; Brehmer and Dettweiler recommend the prolonged application of ice-bags; others use alcohol. Kühle and Liebermeister advise digitalis, which, however, should be used with caution; but more advantageously the ten per cent. tincture of coronilla, in ten to twenty-drop doses, can be employed. In cases of initial fever without grave lesion of tissue, in association with fifteen grains of quinine, Hochhalt has seen this fever transformed into the intermittent type, where arsenical treatment is useful. In apyretic phthisis creosote is used; if at the outset it is not well borne by the stomach, it can be administered in cocoa-butter suppositories—with steady increase of all doses; in commencing with large doses there is danger of exciting the fever. In general the antipyretic treatment consists less in reliance upon the antifebrile remedies, properly so called, which have only a slight and transitory effect, as in the use of remedies which act directly upon diseased pulmonary tissue, than upon arsenic, the cardiac tonics, and nutrition by every means which can stimulate it.—*Revue de Thérapeutique Médico-chirurgicale*, 1893, No. 22, p. 598.

Guaiacol as an Antipyretic.

M. L. Guinard has made use of this remedy by painting it upon the skin. His work has been very carefully carried out, and from it he has reached the following conclusions: The lowering of temperature which is determined by the painting of this drug upon any region of the body is not the result of absorption, because this fall takes place too rapidly. Experiments upon animals show that it acts upon the centres of thermogenesis by exciting the peripheral nerve terminations, and thus reflexly upon the functions of the centres. The presence of the drug in the urine shows that it has entered by way of the respiratory passages, because, if it is excluded from them, it is not found in the urine. The quantity of vapor which can be absorbed in this way is not sufficient of itself to produce this fall of temperature. In the local or general effects of the remedy it is necessary to consider its quality, the individual susceptibility of the subject, and the condition of his health. In febrile cases the diminution of temperature is more

noticeable than in non-febrile individuals. With the last, however, especially when the drug is irritant and when the individual possesses a particular susceptibility of the skin, as in the rabbit, its action may be manifest. The effects are more marked and more intense when the painted region is protected from the air by an impermeable covering. The use of guaiacol in this way represents an original therapeutic measure, simple and convenient, which may render great service when its indications have been determined by a larger number of clinical experiments.—*Bulletin gén. de Thérapeutique*, 1893, 40e liv., p. 339.

Organotherapy.

Dr. Max Kahane presents a very scholarly and timely paper upon this subject: 1. The use of organic tissues and of their extracts, as well as of organic juices for therapeutic purposes, is based upon a rational physiological and experimental pathological foundation which warrants further research. 2. The use of definite glandular extracts for therapeutic purposes and the incorporation of the same in the diseased organism, in which the analogous glands—that is, their products—are wanting, is based upon the new researches concerning the significance of these glands for the organism, and proceeds from the correct theory that the missing products can be restored by the analogously acting products of another healthy organism. 3. The Brown-Séquard injection of testicular juice, as well as the so-called nerve transfusion, is by no means based upon a rational foundation; and it is more than likely that the real therapeutic results—even if the suggestion, which is sure to be present, is taken into account—warrant only the most humble expectations, and that their results may be just as slight in cases of organic disease of the central nervous system as with non-organic methods. This is despite the fact that there has been ascribed to them a capability transcending such physiological effectivity as is explainable. 4. The investigations of extracts of other tissues limit themselves almost exclusively to experiments upon animals, and we cannot, from the standpoint of their therapeutic value at this time, make any definite statement.—*Centralblatt für die gesammte Therapie*, 1893, Heft 11, S. 641; Heft 12, S. 705.

A New Procedure of Metalloscopy with the Aid of a Hypnotized Subject.

Dr. Moricourt states that in hypnotized subjects we may find an exaggeration of sensibility during the period of somnambulism which permits them to feel, in some minutes, the effect of the metals, and that during the period of lethargy the neuro-muscular hyperexcitability permits them to appreciate the aptitude, more or less great, of the different metals to contract the different muscles of the face, or to contractures of the muscles of the limbs. But since all subjects cannot be hypnotized, the new method consists in placing a hypnotized person in contact with the one whose idiosyncrasy toward metals it is desired to know. A person upon whom metals acted only after some hours was placed in contact (hands) with a hypnotized subject, and the application of different metals (copper, tin) to the patient was followed by a speedy impressionability to metals which has since remained.

The patient was neuropathic to a great degree, but her sensitiveness to heat, draughts of air, and gastric symptoms disappeared. It is evident, then, that a latent aptitude for the metals can be awakened by contact with a hypnotized person, and that this person may communicate by contact this impressionability.—*Répertoire de Thérapeutique*, 1893, No. 11, p. 440.

The Use of Codeine.

Dr. Vladimir Preininger discusses this drug from the standpoint of its being a substitute for morphine. He employs it either in powder form with cane-sugar, or in solution with glycerin, distilled water, and syrup. The dose is about one-half of a grain. In insomnia not dependent upon pain it is not reliable, and should sleep be obtained it is only for one or two hours. If the sleep is prevented by pain, codeine will not relieve this symptom, as it only mitigates the latter. In tuberculosis with painful cough, knife-like pains in chest, in the back, and between the shoulder-blades, this drug acts analogously to morphine. This statement is also true for chronic bronchitis. As to whether it will not, after continued use, produce dyspeptic symptoms, it can only be affirmed that it does not. In some cases it apparently relieves these symptoms, and thus confirms Kahler's statement that it has no untoward effect upon the organs of digestion. In acute bronchitis in adults, the irritation was diminished and expectoration followed without pain. In children the results were unfavorable in two cases out of three. In whooping-cough the best result followed in ten apparently severe cases. In two cases of neuralgic pains of the lower extremity, hypodermatic injection was of less effect than morphine. It is yet an open question, however, whether after prolonged subcutaneous use a codeinism could be developed similar to morphinism. It may be possible that there is an antagonism between these drugs, so that, if a codeinism exist, it may be restrained by morphine. And in morphinism codeine may be useful, or indeed indispensable. So far as the present observations go, after prolonged use, no unpleasant or untoward results have been noted, and since this is so it may be of more value than morphine. If, indeed, it is not to be considered as a substitute for morphine, it is a remedy *sui generis*.—*Therapeutische Monatshefte*, 1893, Heft 10, S. 498.

Dr. Alois Pollak concludes that (1) this drug is by no means an inactive remedy, in that poisonous symptoms have appeared from one-grain doses; (2) it is a very serviceable narcotic, but nothing beyond, for it is not a remedy for any disease; (3) it is not to be recommended for painful diseases, as sciatica, or a phlegmon; (4) no noteworthy action on the psychic or the nervous system has been observed in cases of withdrawal of alcohol, morphine, arsenic—it has been without result, indeed an accustoming to the remedy; (5) in inflammation of the female genitalia no result has followed its administration, and further investigation must determine whether it is of advantage to use it after the severe pain has been relieved by morphine; (6) codeine gives good results in most diseases of the organs of respiration. certain affections of the alimentary canal, and perhaps in inflammations of the urinary passages.—*Therapeutische Monatshefte*, 1893, Heft 11, S. 545; Heft 12, S. 599.

Olive Oil in the Treatment of Gastric Ulcer.

Dr. Emanuel G. Senn believes that this condition in the great majority of cases is the result of increased acidity of the gastric juice upon an enfeebled area. He administers large doses of the oil to lubricate the denuded surface, decrease friction, and prevent contact with the irritating effects of the abnormal gastric juice. The oil apparently favors coagulation of blood in the stomach. A single case is reported in which success followed the administration of a tablespoonful of the oil every two hours.—*The Chicago Clinical Review*, 1894, No. 4, p. 232.

The Use of Olive Oil in the Treatment of Nephritic Colic.

Dr. Aussilloux believes that one of four theories must be held in regard to its mode of action: 1, direct action upon the calculus; 2, cholagogue action; 3, purgative action; 4, reflex action. The first appears to be with difficulty tenable, because there is not any evidence that the oil reaches the stone, and further, if they are immersed in oil, they do not change their appearance or consistence. The cholagogue action is more satisfactory, for the bile, secreted in abundance, may accumulate behind the stone and thus carry it forward. Yet other cholagogues do not so act, and the relief comes too soon for this effect to be established. Its purgative action does not entirely account for its value as a remedy, for other more active purgatives do not succeed as well as this. In fine, one must resort to the explanation of Weil, that it has an analgesic effect upon the alimentary canal in that it stops the spasm of the biliary passages; later its cholagogue action favors the descent of the calculus. If, then, it can act in hepatic colic by relieving the spasm, so it should also act in nephritic colic. Two successful cases are reported. The dose formerly recommended was large, even six or eight ounces. The author regards these as unnecessarily large. Several dessertspoonfuls may be taken at intervals more or less long, the mouth being rinsed before and after the dose with an alcoholic solution of mint. Olive oil has been popularly used from time immemorial for all sorts of abdominal pains, and it is possible that scientific experiment will justify the popular empiricism.—*Bulletin gén. de Thérapeutique*, 1893, 46e liv., p. 491.

The Valerianate of Amyl.

Dr. Blanc recalls the fact that from time immemorial cider has been believed to have a beneficial effect upon gravel. The amyl-valerianic ether which is made by distillation, and is found mixed with alcohol in cider-brandy, is a mixture of the valerianate and butyrate of amyl. The former possesses a marked solvent action upon cholesterin. It is a colorless, mobile liquid of ethereal odor, disagreeable when inhaled in quantity, very sweet, and identical in odor with that of the russet apple. Its general physiological action recalls that of ether: it produces a lively general excitement and a slight intoxication, with acceleration of the pulse, warmth of the skin, sweating, general agitation, and then a tendency to sleep. If absorbed by the respiratory tract, it produces anæsthesia like ether. Its principal use is

in hepatic colic, where its stimulant and at the same time its anæsthetic properties, to which may be added its power to dissolve cholesterin, make it very valuable. It is less prompt than perhaps the ether in Durand's mixture, but it appears to be more lasting and more certain as a preventive. It can be agreeably used in capsules. In cases of dyspepsia, by no means uncommon in connection with hepatic disease, it may produce vomiting; in this case ether may be used at the start, or an injection of morphine may be administered. Later the valerianate of amyl may be given in two and one-half grain capsules every quarter- or half-hour until the crisis is past. The drug does not act by exciting the secretion of bile, but by terminating the painful spasm of the duct by the anæsthesia which it then produces to a greater or less degree, and by entering into the circulation prevents the concretion of cholesterin in crystals. In nephritic colics it acts only as an antispasmodic and general stimulant without affecting the calculus itself, although it benefits the accompanying cystitis. In nervous troubles, gastralgic crises, colics of reflex origin (cold), intercostal neuralgias, muscular rheumatism, have been benefited. Menstrual colics are relieved and even the flow increased; and in this respect it is superior to apiol, especially as being less excitant. The dyspnœa, even of angina pectoris, diminishes under its use. In hysteria it calms the convulsive manifestations, the hyperæsthesias and the neuralgias; it benefits the contractures. In alcoholic delirium it appears to have been used with success, acting better than morphine. It is very feebly poisonous; five or six capsules per day of the above-mentioned dose can be safely taken. To avoid gastric symptoms it is well to previously purge the patient, and if the treatment is to be of considerable duration a milk diet may be prescribed.—*Revue de Thérapeutique Médico-chirurgicale*, 1893, No. 23, p. 630.

The Treatment of Bright's Disease.

Dr. W. H. Walling presents what he terms a new departure. The diet was exclusively a meat one. Lean beef was finely chopped in a suitable machine, after having all the fibrinous and fatty portions removed. It was then broiled quickly, served hot, being salted to taste. A little butter was allowed; toasted brown bread, tea or coffee with a little milk but no sugar, constituted the balance of the diet. One hour before each meal and at bed-time, one or two cupfuls of hot water, acidulated with lemon-juice, were given. Peaches were added as they came into the market. In the reported case the appetite improved, strength began to be restored; there was no more nausea and but little flatulence. Iron in the form of an albuminate, digitalin, strophanthin, were the drugs employed. A rigid adherence to the diet appears to be essential, for it was noted that the albumin increased, and the nausea, loss of appetite, flatulence, and distressing heart symptoms, with a general decline of vitality, appeared with a discontinuance of the diet.—*Notes on New Remedies*, 1893, No. 7, p. 105.

The Treatment of Diabetic Intoxication.

Dr. Henri Huchard finds three indications to meet: 1, to prevent the formation of toxic substances; 2, to favor their elimination; 3, to neutralize

them chemically, for opposing the grave accidents as in the period of coma. The diabetic intoxication is the result of incomplete combustion of glucose, resulting in acids which are toxic for the organism and a diminished alkalinity of the blood, poisonous of itself. In diabetic coma, with immediate necessity for the introduction of alkalies into the economy, but three routes are open: 1. Intravenous saline injections of sulphate, phosphate, bicarbonate or chloride of sodium in solution; these, intended to neutralize the acids and favor the elimination, have never cured diabetic coma. 2. Subcutaneous saline injections, the hypodermoclysis of Cantani, using chloride of sodium, can dilute the toxins and favor their elimination by increasing vascular tension and urinary secretion, but as yet it has not been put to use in diabetic coma. 3. Transfusion of blood has been used by Lecorché in three cases of coma, and death without regaining of consciousness, took place. Bleeding, and that extensively, should be strongly recommended in diabetic coma. In preventing the coma the anti-diabetic medication of Mialhe, the use of the alkalies, is serviceable. The bicarbonate of soda from seventy-five grains to three times that quantity per day is the best preventive of this condition. Fatigue, mental emotions, long journeys, and violent exercise, should be avoided. Loss of fluids, as profuse sweatings, diarrhœas, injections of pilocarpine, the use of opiates, must be prevented. An exclusive meat diet "may cure the diabetes but aggravate the diabetic." Even an excessive quantity of meats and fats may precipitate a coma, as Ebstein has shown. It is also necessary to prevent abnormal fermentations in the alimentary canal. To eliminate the toxic products it is well to prescribe the purgatives, as calomel, the salines, and diuretics. Particularly in diabetic intoxication is it necessary to prevent cardiac weakness by digitalis or digitalin, or if fatty degeneration is suspected, by hypodermatic injections of caffeine. The period of diabetic coma offers but slight hope for cure; in avoiding this condition and in carrying the patient to a successful result two points are essential—to foresee and to prevent.—*Revue gén. de Clinique et de Thérapeutique*, 1893, No. 46, p. 722.

Diuretin.

Dr. E. Main believes that this drug owes its activity to the theobromine which it contains. The insolubility of the latter has been overcome by its forming a double salt with salicylate of soda, which is soluble in one-half of its weight in water, and is readily absorbed. In spite of much contradictory evidence, it is believed that this drug owes its diuretic properties to a direct and non-irritant action upon true renal tissue. Whether or not it has any influence upon the heart is not altogether clear. Aside from its use in œdema and as a diuretic it has two especial uses. In children it should not be administered under the age of eighteen months, as it is likely to produce a digestive disturbance and gastro-intestinal irritation. If used in scarlatinal nephritis it should not be administered until after the termination of the first stage of the disease. After operations upon the urinary tract it has been found that it prevents the onset of urinary fever, and as well shortens the time of convalescence after the operation. It does not apparently directly influence the respiration nor excite the nervous system so much as caffeine. With the exception above noted it does not produce digestive disturbances.

Beyond diuresis it is not likely to produce urinary symptoms, nor does it have a cumulative effect—nor, indeed, can a tolerance be established. The daily dose is from sixty to ninety grains, divided into fifteen-grain doses every two or three hours. Even one hundred and fifty grains have been given without danger. With children the solution can be sweetened and a small quantity of alcohol added for its preservation.—*Bulletin gén. de Thérapeutique*, 1893, 38e liv., p. 299.

Opium as a Preventive of Ague.

Surgeon-General Sir William Moore has known opium consumers alone remain free from fever when most others suffered during extraordinary malarious seasons. As servants in India he preferred opium users, as they are less liable to sickness from exposure on the march or when taken into the colder climates of the hills. One of the constituents of opium, narcotine, has been proved to be an antiperiodic. Opium (especially when smoked) in small quantities excites the circulation and produces a glow throughout the whole system. In large quantities it soothes the system and blunts nervous sensibility. Both of these actions are antagonistic to chill, which is the first stage of malarious fevers, especially of ague. After working and perspiring all day under a tropical sun the Indian is very likely to become chilled. As a consequence of his taking opium after, or sometimes before, his evening meal, instead of feeling cold and shivering, he remains warm and glowing, and so escapes chill, which, if not the real and only cause of malarious fever, is certainly the cause of many repetitions of attack.—*British Medical Journal*, 1893, No. 1718, p. 1196.

MEDICINE.

UNDER THE CHARGE OF

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Isolated Peripheral Palsy of the Supra-scapular Nerve.

Bernhardt (*Berliner klin. Wochenschrift*, 1894, No. 2, p. 32) has reported the case of a sailor, twenty-eight years old, who had for four years suffered with pain at the right shoulder, aggravated by movement. Except for this and some difficulty in moving the right arm the well-nourished and well-developed man was in perfect health. On inspection it was found that the right scapula occupied a slightly lower position than the left, and that its

inner vertical margin was removed a little farther from the vertebral column than that of the left. The right supra-scapular fossa was less full than the left, while the right infra-scapular fossa was distinctly excavated. The rhomboids, the levator anguli scapulæ, the trapezius, and the serratus were functionally normal and responded to electric stimulation. Despite non-involvement of the right deltoid, the patient was able to elevate the right arm with ease only to a horizontal level. By a further effort, however, he could raise the arm to a vertical position. It was evident that this was brought about only by an extra strain upon the deltoid and upper portion of the trapezius, as if in an endeavor to overcome some obstacle. The success of this effort was indicated by a visible and palpable sudden movement, after the occurrence of which the arm could be brought to the vertical position. The explanation offered for this state of affairs is that, by reason of the paralysis and atrophy of the supra-spinatus, the head of the humerus was not retained within the glenoid cavity, and that in raising the arm the head of the bone came in contact with the margin of the cavity—the interference thus encountered being overcome by the extra effort of the deltoid; the further progress of the arm was permitted as soon as the head of the humerus slipped into the glenoid cavity. External rotation of the arm was also impeded. In sewing sail there was difficulty in directing the needle outward; but no difficulty in writing had been observed. The arm could be brought well backward. The infra-spinatus muscle failed to respond to all electric stimulation. It is believed that there must have been an isolated degenerative inflammation of the right supra-scapular nerve, with consequent palsy and wasting of the supra-spinatus and infra-spinatus muscles. The affection would appear to be a rare one, for Bernhardt has observed but one other case, and he has been able to find but four additional recorded cases.

The Nature of Muscular Rheumatism.

Leube (*Deutsche med. Wochenschrift*, 1894, No. 1, p. 1), as a result of an experience with some two hundred cases, arrives at the conclusion that muscular rheumatism is an infectious disease, perhaps dependent upon an attenuated form of the micro-organisms upon which it is believed that acute articular rheumatism depends. Pathologic evidence in support of this hypothesis is wanting, as muscular rheumatism is not a mortal disease, but the clinical facts are in its favor. The onset of muscular rheumatism varies in different cases. In some instances the pains in the muscles are preceded by a sense of fatigue, loss of appetite, headache, vertigo, and general malaise, and sometimes there is prodromal fever. As a rule, however, severe pain sets in abruptly as the first symptom. It is not notable when the affected part is at rest, but is induced by movement. The muscles successively involved are not necessarily contiguous or related in function; on the contrary, they may be remote from the seat of primary involvement. In about two-thirds of the cases observed the course of the attack was afebrile; the remainder presented febrile manifestations of varying degree and type. In one-sixth of the cases cardiac murmurs were audible when the patients came under observation. It is, however, not implied that in all of these cases a relation existed between the rheumatism and the endocardial lesion; but in more

than half the number the murmur grew fainter or disappeared entirely in the course of observation; besides, while only one-third of the whole number of cases were attended with fever, two-thirds of the cases associated with endocarditis presented febrile manifestations. In three of the cases, however, in which the signs of endocarditis were not present when the patients came under observation, such signs made their appearance in the course of the attack of muscular rheumatism. That there is some relation between articular and muscular rheumatism would appear indicated by their frequent coexistence; while the occasional occurrence of groups of cases would suggest an infectious origin.

Intra-cranial Hydatids.

Clarke (*Brain*, Part lxiii. p. 424) has reported the case of a man, twenty-nine years old, who for eighteen months had been having occasional epileptiform attacks, in which consciousness was lost and the tongue was bitten. For twelve months there had been progressive loss of power upon the left side of the body. Twice within a period of six months there had been attacks of pain in the left eye, with double vision. Three weeks before coming under observation the man had been seized with violent pain in the left temple, radiating over the left side of the head to the occipital region, and which had persisted. He seemed dull and was drowsy, but could not sleep, and took no notice of what was going on about him. He could scarcely walk, and dragged the left leg. The wrinkles of the left side of the forehead were somewhat smoothed out; the right eye could be screwed up a little more tightly than the left, and on smiling the mouth was drawn to the right. The localization of sensations, both tactile and painful, was impaired upon the left side of the face, while thermic sensibility was unchanged. The tongue was protruded straight. There was some drooping of the left upper eyelid. The left pupil was larger than the right and did not react to light. There was optic neuritis of moderate intensity in both eyes. The power of localizing sensations was impaired upon the left side of the body, but sensibility was otherwise preserved. There was incontinence of urine, which was free from albumin. The left knee-jerk was exaggerated, but there was no ankle clonus. There was no evidence of disease of the thoracic or abdominal organs. In the course of a week the ptosis on the left side had become more marked, and the left external rectus was paralyzed; the optic neuritis had increased, but some power had been regained in the left arm and leg. Two weeks later the left eye was completely paralyzed and immovable and there was cycloplegia and nearly complete loss of vision; there was additionally some convulsive twitching of the left hand. After the lapse of another two weeks the right internal rectus was paralyzed and vision was lost in the nasal half of the right visual field, while even light-perception was lost in the left eye. Muscular wasting was now evident in the left arm and leg, and reactions of degeneration were present. During the month that followed a remarkable degree of improvement took place in the paralytic symptoms, although the mental condition grew steadily worse. During this time a convulsion took place, in which the muscular twitchings began in the left hand, spread to the left side of the face, and then became general. Soon after this the

man became much worse, lay in a stuporous condition, and could not masticate his food. There was now rigid spasm of the left arm and leg. Sensation was lost upon the left eyeball, and marked unilateral sweating took place upon the right side of the face, head, and trunk. The head and eyes were turned to the right, and the right pulse was distinctly larger than the left. Death took place in coma, the temperature, which had never exceeded 99° during the progress of the case, reaching 105° shortly before death. The treatment consisted in the administration of potassic iodide, with mercurial inunctions, and hypodermatic injections of morphine for the relief of pain. At the post-mortem examination a large hydatid cyst, containing several daughter-cysts, was found in the posterior part of the left cerebral hemisphere. The cavity measured three inches in the antero-posterior, and two inches in the vertical and transverse diameters. Its walls were smooth and rounded, and showed no signs of inflammatory changes. It thus occupied and replaced the greater part of the white matter of the parietal and occipital lobes. It came nearest to the surface above, under the anterior part of the superior parietal and the upper and upper mesial portions of the ascending parietal convolutions. In this situation the pia mater was firmly adherent to the cortex, the gray matter of which was reduced to a layer about one-twelfth inch thick. The cortex had undergone most extensive atrophy under that part of the ascending parietal convolution which was concerned in the movements of the arm, and here the ascending frontal convolution was also encroached upon for a short distance. The boundaries of the cyst were sharply defined and surrounded at all other parts but those named by healthy white matter, a broad layer of healthy white substance intervening between it and the cortex. A second cyst, as large as a hazel-nut, was found at the back of the left orbit, lying between the anterior clinoid process and the sella Turcica, just posterior to the sphenoidal fissure and the optic foramen. This had compressed and destroyed the left optic nerve and the motor nerves of the eyeball. All other parts of the brain were healthy. Other cysts were found in the spleen and kidneys. The upper part of the cervical region of the spinal cord was not preserved, but throughout the remainder of the cord well-marked degeneration of the left crossed pyramidal tract was found. The nerve fibres had been largely destroyed, but the sclerosis was of moderate intensity. Sections stained in carmine showed numerous spider-cells. On carefully comparing the two sides in a number of sections the motor cells of the anterior cornu were found to be less in number upon the left than upon the right; some had undergone atrophy; others appeared granular and swollen, with loss of their processes. On the left side also the cells were more deeply pigmented and there was a larger amount of pigment in cellsthus affected, the nucleus often being obscured. The vessels in the left cornu were more injected and the perivascular sheaths were distended. In some sections there appeared to be a diminution in the fine myelinated fibrils of the gray matter of the left anterior cornu. These changes were more evident in the lower cervical and upper dorsal regions than in the lumbar and sacral portions of the cord. In some sections the alterations were slight, and in most individual sections might easily be overlooked; it was only by comparing the two cornua in a very large number of sections taken from different levels that it became apparent that there was an evident

though partial change in the motor cells of the left cornu throughout the cord. When compared with the right side, sections of some of the left anterior roots showed disappearance of some nerve fibres.

Primary Sarcoma of the Stomach.

Westphalen (*St. Petersburger medicinische Wochenschrift*, 1893, No. 45, p. 403) has reported the case of a man, twenty-eight years old, who for about a year had complained of intense epigastric pain, independent of the taking of food, occurring sometimes shortly before eating, at other times six or seven hours after eating, and occasionally during the night. At times vomiting took place, particularly early in the morning, with the ejection of mucus and acid liquid. Meat and coarse starchy food were less well borne than other articles of diet. There was a history of previous alcoholic excess, of gonorrhœa and of syphilis. The patient had lost seventy pounds in weight in a year. The nutrition, nevertheless, appeared fairly well preserved, and the anæmia was not conspicuous. Upon palpation a sense of resistance was appreciated to the left of the median line, several fingerbreadths above the level of the umbilicus. The dulness elicited upon percussion was lost in that of the liver, but was separable from that of the spleen. The patient believed that this condition, together with digestive derangement, had been present for a year, progressing but very gradually. Investigation disclosed a condition of gastroptosis; gastric motility and absorption were somewhat delayed, tardy; the acidity of the gastric secretion was diminished, hydrochloric acid ultimately disappearing. The diagnosis remained doubtful until, on one occasion, when the gastric contents were expressed an hour after the ingestion of a glass of ice-water, a bit of tissue was found which, on microscopic examination, displayed the histologic appearances of a round-celled sarcoma. Operation was advised and undertaken, but the growth proved to be too extensive to permit of its removal. The patient lived for a month longer. Upon post-mortem examination, the walls of the stomach were found to be thickened and the muscular structure in many places almost entirely wanting and replaced by tissue of a medullary and gelatinous appearance. The mucous surface was nodulated, some of the swellings being marked by superficial ulceration. A number of small nodules were also present in the small omentum. There was, besides, bilateral pleuropneumonia, with effusion. Microscopic examination demonstrated the neoplastic formations to be of the nature of myxo-sarcoma.

The Varieties of Peripheral Neuritis.

Cramer (*Centralblatt f. allgem. Pathologie u. patholog. Anatomie*, No. 22, 23, B. iv. p. 914), as a result of a careful analysis of the literature of the subject, concludes that a classification of peripheral neuritis, based upon the anatomic lesions, is at present impossible, nor can the clinical features be explained by the anatomic lesions. In accordance with their etiology cases of peripheral neuritis may be classified into infectious, toxic, and dyscrasic, presenting respectively distinguishing characteristics, both as to course and pathologic anatomy. Infectious neuritis is but rarely latent, but is rather

characterized by its relative rapidity of course. The lesion of the peripheral nerves presents almost all stages of medullary degeneration, simply atrophic nerve fibres and empty sheaths of Schwann being relatively uncommon, while interstitial changes are usually most common. In harmony with the acuteness of development there are found hemorrhages, distention of the bloodvessels, accumulations of leucocytes in the vessels and in the tissues, and cellular proliferation generally. Toxic neuritis is characterized by the involvement of circumscribed nerve areas, varying with the toxic agent. Latency, of course, does not seem to occur. The anatomic lesions frequently consist in a simple atrophy of the nerve fibres. Accumulations of round cells are quite uncommon, and recent hemorrhages into the interstitial tissue are almost entirely wanting. It would appear as if toxic neuritis were further characterized by segmental and periaxial involvement in the inflammation of at first individual nerve fibres, subsequently leading to a homogeneous emulsification of the corresponding medullary division. The dyscrasic form of peripheral neuritis frequently pursues an entirely latent course. Its eminent characteristic is chronicity. Simple parenchymatous atrophy is the predominant anatomic lesion. Frequently all that is found is a condition of simple atrophy, with empty sheaths of Schwann. When interstitial changes are present they usually consist in simple proliferation of the connective tissue, which not uncommonly contains vessels with thickened and obliterating walls.

Specific Treatment of Enteric Fever.

Eugene Fraenkel (*Deutsche med. Wochenschrift*, 1893, No. 41, p. 985) records a number of exceedingly interesting and valuable observations upon the employment of attenuated cultures of the typhoid bacillus of Eberth in the treatment of 57 cases of enteric fever; and Rumpf (*Ibid.*, p. 987) reports a series of 30 cases treated with attenuated cultures of the bacillus pyocyaneus. Both sets of observations were carried out at the New General Hospital at Hamburg, and the results obtained in each series of cases were strikingly parallel. Thymus bouillon was inoculated with ordinarily virulent cultures of the respective organisms and placed for three days in the thermostat at a temperature of from 96.8° to 98.6°. The bouillon was then sterilized by being placed for about twenty minutes in a water-bath at a temperature of 145.4°. Of this fluid 0.5 c.cm. were injected into the gluteal region as the initial dose as soon as the diagnosis was made, only the graver cases, however, being subjected to the treatment. The first injection was, as a rule, followed by no appreciable change in the condition of the patient. On the following day the dose was doubled—*i. e.*, 1 c.cm. of the fluid was injected into the opposite gluteal region. Soon afterward, in most cases, some elevation of temperature was noticeable, at times accompanied with chilliness or a chill. On the third day a distinct decline of temperature was observed, and on the following a still further decline; the temperature now not uncommonly being lower than it was at the outset. If further treatment was abstained from, the temperature began again to rise, and this thus became the indication for the next injection of an increased dose. Two centimetres of the bouillon were now injected, the temperature behaving

much as it did before, with, however, a net reduction on the whole. The result was that a fever of continuous type was converted into one of remittent type, and in a short time there was complete apyrexia. The rapidity with which this result was attained varied somewhat with the individual case. Much depended upon the stage of the disease in which the patient came under observation; the earlier the better. This rule is, however, not free from exceptions: a beneficial influence was sometimes observed in cases in which the treatment was not instituted before the last stage of the disease. Together with the remissions in the pyrexia a corresponding improvement in the general condition was to be observed, the decline of temperature being attended with a copious, agreeable sweat, while at the same time there was an increased elimination of urine. The diarrhœa also appeared to be favorably influenced, and, on the whole, the patients, as a rule, presented the picture of convalescence at a time when the roseola was yet present and the enlarged spleen was still palpable. Meanwhile the patient could be better nourished, so that when the time came for him to leave his bed, some fourteen or sixteen days after the occurrence of defervescence, he was in far better condition than is the case under ordinary circumstances. Complications, even of a fatal character, were not to be absolutely averted, though the treatment was not without avail in this direction. Neither was the treatment capable of invariably preventing relapses. These, however, responded to the treatment in the same way as the primary attacks. While the hope is not encouraged that this method of treatment will prove successful in every case, it is claimed that it is more capable of favorably modifying the course of the individual attack and of shortening its duration than any other method of treatment yet employed. The injections themselves gave rise to no complications. Fraenkel fails to give in figures the results of his treatment, but among the 30 cases treated by Rumpf there were but two deaths—one from intestinal hemorrhage, the other from pneumonia. In the cases treated with dead pyocyaneus bacilli, both the elevation that followed immediately upon the injection and the subsequent decline were slightly less than in the cases treated with dead typhoid bacilli.

A Case of Gliomatosis attended with an Arthropathy.

Sonnenburg (*Berliner klin. med. Wochenschrift*, 1893, No. 48, p. 1161) has reported the case of a somewhat demented man, fifty years old, who came under observation on account of some slight affection of the leg, and was found to present changes of a trophic nature at the left shoulder-joint, in conjunction with the symptoms of gliomatosis of the spinal cord. No history of traumatism could be elicited, but the man was left-handed and had been an organ-grinder, and it was thought that this association might possibly have been the exciting cause of the articular condition. On account of the mental condition of the patient the particulars of the previous history could not be reliably ascertained. On investigation it was found that the temperature sense and the pain sense were impaired in the left upper extremity and the adjacent portion of the neck and thorax, while the pressure sense and common sensibility seemed not to have suffered. The tendon reflexes and the cutaneous reflexes were not altered. The patient complained only

of dull pain referred to the left shoulder-joint. Upon inspection the left shoulder was seen to be flattened and upon a somewhat lower level than the right. The muscles of the left upper extremity, particularly of the upper arm, were decidedly atrophied; those of the scapular muscles were affected similarly, but in slighter degree. The glenoid cavity of the scapula was palpable and appeared flat and empty; the acromial process was shorter and lower than usual. The upper extremity of the humerus could be felt distinctly below the empty glenoid fossa; it was freely movable and not larger, but perhaps a little smaller, than the adjacent shaft. Nothing corresponding to the head of the humerus was appreciable. The extremity of the bone was, however, distinctly rounded. This loss of the head of the humerus readily permitted the occurrence of luxation beneath the coracoid process and into the axilla. Active movement in the joint was greatly restricted, while passive movement was not interfered with. All movement was free from pain. There were no osteoplastic deposits, neither in the glenoid cavity, nor in the capsule of the joint, nor in the tendons or muscular attachments. The elbow-joint and the wrist-joint appeared to be normal, but the capsules of the joints of the fingers were too large and permitted of undue movement.

The Presence of Eosinophile Cells in the Blood.

Zappert (*Zeitschrift für klinische Medicin*, Band xxiii., Hefte 3 u. 4, p. 226), as the result of a large number of observations, has found that in otherwise healthy persons the number of eosinophile cells present in the blood fluctuates between 50 and 250 in the cubic millimetre. The upper limit is not infrequently exceeded and an increase to 700 or more is not an exceptional observation. In children a large number of eosinophile cells is the rule. Sex, the existence of gravidity, and the occurrence of menstruation were not found to have any influence upon the number of eosinophile cells. In leukæmia the absolute, but not the relative, number of eosinophile cells is increased; the percentage fluctuates between 2 and 6. Cases of chlorosis and profound anæmia are divisible into two groups: one with the normal or an increased number, and one with a diminished number of eosinophile cells. This division, however, has no bearing upon the prognosis. In cases of cardiac disease no increase was found. Afebrile pulmonary tuberculosis is frequently attended with a diminution. In cases of bronchial asthma and pulmonary emphysema an increase takes place. Affections of the liver, excluding neoplasms, are also frequently attended with an increase in the number. In cases of nephritis there is an increase independently of the occurrence of uræmic symptoms. In the so-called functional neuroses the number is frequently increased, while in organic disease of the nervous system and in the psychoses the number, as a rule, remains normal. A large number of diseases of the skin are characterized by increase in the number of eosinophile cells, varying with the character and intensity of the disease—the extent of distribution, however, being of but secondary importance. It may be that the progressive cachexia attendant upon the presence of malignant neoplasms may cause a diminution in the number of eosinophile cells. A considerable diminution takes place immediately before death. In case of

high fever the number is frequently diminished; after defervescence, however, it is not uncommon for an increase to take place. This increase sometimes takes place during the febrile period.

The Nature and Manifestations of Fever.

Hiller (*Zeitschrift für klin. Medicin*, Bd. xxiii., Heft 5, 6, p. 399), from a study of the nature and the manifestations of the febrile process, arrives at the conclusion that fever consists essentially in an increase of heat-production as a result of some morbid process, and that the symptoms of the condition arise from the altered relation between heat-production and heat-dissipation; the bodily temperature rising when production exceeds dissipation (febris ascendens), remaining at the same level when production and dissipation are equal (febris continua, the normal temperature in health), and falling when dissipation exceeds production (febris descendens). The degree of heat-dissipation, which occurs principally through the skin, is determined by the thermic sensibility of the cutaneous nerve-endings beneath the epidermis. Both thermic sensibility and heat-dissipation vary in different parts of the body. The amount of heat-dissipation is greater in parts not covered by hair or clothing and directly exposed to the air, and the thermic sensibility of the cutaneous nerves is by habituation considerably less. The subjective sense of heat or of cold is determined by the thermic sensibility of the covered parts of the body, partly by reason of the large extent of surface and partly by reason of the greater sensibility of the cutaneous nerves of these parts. The cutaneous nerve-endings of the covered parts of the skin are from birth accustomed to a certain degree of rapidity of heat-dissipation as a result of which there is a fairly constant difference between the temperature of the body (98.6°) and that of the clothing (96.8°). This rapidity of heat-dissipation fluctuates within narrow limits, bears an intimate relation to the maintenance of the thermometric equilibrium, and gives rise to the feeling of thermic comfort in the skin. Every variation in the rapidity of this dissipation acts as an irritant (thermic irritation, comparable to electric stimulation). Increased heat-dissipation gives rise to a feeling of chilliness, diminished dissipation to a feeling of heat. The action of either stimulus is antagonistic to that of its cause—in the one instance checking the increase, in the other augmenting it. In consequence of deficient functional exercise of the unstriated muscular fibres this action is a slower one in the covered parts of the skin, and in consequence of the smaller number of bloodvessels present the action is less pronounced. In fever of ascending type the ascent of the cutaneous temperature resulting from the elevation of the internal temperature occurs earlier than the elevation of the temperature of the clothing, as the dry epidermis is a poor conductor of heat, which it gives off almost solely by radiation; the resulting increased rapidity of heat-dissipation gives rise to a chill. The more rapidly the internal temperature, and also the cutaneous temperature, rises, the more severe and more protracted is the rigor. In the same way in fever of descending type, at times, in the crisis, the lowering of the internal temperature, and with it that of the skin, in consequence of the cessation of febrile production of heat, takes place more rapidly than that of the body-covering; the resulting progressive retardation of heat-dissipation

is attended with a feeling of heat and perspiration. After the febrile production of heat has reached its maximum a period is reached in which the difference between the temperature of the skin and that of the body-covering equals that which is present in health. The skin again feels comfortable. Any change in the existing degree of rapidity of heat-dissipation acts as an irritant. Probably the intensity of the irritation and the sensibility of the cutaneous nerves is greater as a result of the elevation of temperature. However this may be, the result is that heat-dissipation and heat-production become equal. The bodily temperature remains at the same level (febris continua). There is thus again established a condition of the thermometric equilibrium, as in health, with the difference, however, that heat-production and heat-dissipation are both greater. This condition of equilibrium is maintained as long as the heat-production (which depends upon the febrile disease-process) and the conditions for heat-dissipation (including the bed and the surrounding temperature) remain unchanged.

SURGERY.

UNDER THE CHARGE OF

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THE SECONDARY UNION OF PORTIONS OF SKIN REMOVED FROM THE BODY WITH THE ADJACENT FAT.

HIRSCHBERG (*Archiv für klin. Chir.*, 1893, Band xlvi., Heft 1) deals at great length with the historical portion of his subject, to support his theory that hyperæmia and a weakened condition of vasor tonus are the salient features in the success of transplanting unpediculated skin-grafts, containing the entire thickness of the skin, and also the underlying connective and adipose layers of tissue. He says of his method: "The secret, in my opinion, of transplantation lies in the use of portions of skin rich in vascular supply, and especially in an artificially produced hyperæmia." He reports four successful cases in which the operation performed was the following: While the defect to be filled is held under compresses by an assistant, the operator places an Esmarch bandage and tube on the uplifted arm. The bandage is removed after a few moments, the arm laid upon the operating-table, and the portion of skin to be transplanted is beaten for two or three minutes with a doubled-up small rubber drainage-tube; he then cuts out the three sides of the graft; through

these three sides he passes sutures, leaving each with its needle *in situ*. Not until the bleeding is entirely controlled does he remove the Esmarch tube. In a few minutes the flap reddens and is markedly swollen, and the papillæ of the cuticle stand out.

After all bleeding has stopped and the wound is aseptically clean, he cuts the fourth side with scissors, lays the graft, skin side down, upon an aseptic gauze compress soaked in warm normal salt solution, and rearranges his sutures. Then the skin is quickly placed in the prepared wound and sewn in place; sometimes fine approximation sutures are required. Any oozing under the graft is then gently stroked out at the free, or fourth side, which is then sutured in place. The dressing consists of protective gauze, compress cotton, and a light compressing bandage. The healing took about six weeks; there was slight necrosis and considerable exfoliation of the epidermis during the healing process.

Skin-transplanting Without a Pedicle.

The successful restoration of the skin, after traumatic injury or operative removal, to its normal condition is a subject of wide interest. The work done in this direction by Krause (*Arch. für klin. Chir.*, Band xlvi., Heft 1) is noteworthy. He has within the past two years transplanted over one hundred grafts in twenty-one different cases; of these only four grafts entirely died. It does not matter how large the pieces are. Spindle-shaped strips eight to ten inches long and two and a quarter to three inches wide at their widest parts heal as easily as smaller ones. The main points in the production of good results are perfect asepsis, dry wounds, and a dry graft. The author's method of operation is as follows: The field of operation—either a fresh wound as after the removal of a tumor, or converted into a fresh wound by curetting—must be made antiseptic, preferably with sublimate solution; the antiseptic must then be completely washed away by a sterilized salt solution, and the wound dried with sterilized gauze. From this point the wound, the instruments, and the hands of the operator must be aseptic and dry. If the wound is an old one in which scar and other fibrous tissue has developed, all such tissue must be removed and only normal tissue remain. The same holds good for operations over the tibia; if there is thickening, it must be chiselled away. The field of operation is then covered by a compress and tight-fitting aseptic gauze bandage.

The skin that is to be transplanted is now thoroughly cleansed and made aseptic. Too much rubbing should be avoided; the sublimate should be entirely washed away with the sterilized salt solution, and the skin made perfectly dry. In this case, as in the other portion of the operation, the operator's hands and instruments must be dry, and asepsis, not antisepsis, used. The anterior and inner surfaces of the arms and thighs are to be used, as also that from the glutei. The strips taken should generally be spindle-shaped, as such wounds are more easily closed, and should be afterward trimmed as required. The section is cut out and then dissected up, the knife being held perpendicular to the flap. The layer of connective tissue between the skin and subcutaneous fat should be dissected up with it, but it makes no difference if small particles of fatty tissue come with it.

This graft or skin-flap is then dried by aseptic gauze compresses, with perhaps the arrest of the slight hemorrhage by torsion. It is immediately placed upon the already prepared wound, after the necessary trimming to make it fit, and is held in place by an aseptic gauze compress until it is fixed in place by a thin film of coagulated blood. Stitches are not needed, except, perhaps, in the face, and only act as foreign bodies.

The dressing consists of five per cent. sterilized iodoform gauze placed smoothly over the wound and fixed in place by the gentle pressure of an aseptic dressing, and if the case is on a limb, a splint. The first change of dressing is on the third or fourth day, when blisters will be found upon the transplanted graft, which must be carefully cut away. In order that there may be no injury to the graft, only the first bandage should be removed, and the limb then placed in a boric acid bath. In facial operations the iodoform gauze must be thickly spread with borated vaselin, and in all cases great care must be exercised in changing the dressings. The appearance, at the end of four days, is white, or, if soaked with blood, purplish and livid; at the end of seven or eight days there is a rose tint, which becomes more marked at the end of two weeks, especially when the exfoliated epidermis has been cleared away. There are sometimes slight superficial necroses that quickly heal over. The transplanted skin heals over any underlying normal tissue equally well. Complete healing occurs in from three to six weeks, depending on the underlying tissue and the age and condition of the patient. As the entire skin is used, eyebrow defects can be supplied by transplanted scalp. The skin is movable after healing has taken place, while microscopical examination twenty-two days after operation showed normal adipose tissue.

Anæsthesia Statistics.

Gurlt (*Arch. für klin. Chir.*, Band. xlvi., Heft 1, 1893) gives an interesting analysis of the statistics collected during the past three years regarding surgical anæsthesia. There were 50,062 observations made by sixty observers; there were 11 deaths, or 1 in every 4551 cases. This is the average for all anæsthetics except nitrous oxide as used in dentistry. There were 133,729 cases of chloroform narcosis, with 46 deaths, or 1 death in 2907 cases. There were 14,646 cases of ether narcosis, with 1 death. There was 1 death in 4118 cases of mixed chloroform and ether narcosis. There were 3440 cases of narcosis with the A. C. E. mixture, without a death. The proportion with the ethyl-bromide was 1 death in 4555 cases. Pental had the greatest mortality, 3 deaths occurring in 597 cases. The one case of death from ether reported was in a patient weak by an accident requiring amputation of both forearms, but the shock, collapsed, and alcoholic condition of the patient made recovery in any case improbable, and the patient died three hours after operation, so it can scarcely be called a death from ether. The general conclusion to be drawn from his *résumé* of these cases is that ether is showing itself to be the better anæsthetic, and is so considered by the surgeons of Germany. The absence of a death in 14,646 cases, and its adoption and further recommendation by many more eminent surgeons each year, show its rapid progress and the place it is earning for itself. As this author says

of the reports made by its friends: "All these quotations, which are not insignificant in number, leave no doubt that we possess in ether the most harmless and most efficient anæsthetic for all purposes, and that it is our duty, wherever human life is concerned, to return, when our better judgment tells us, to that anæsthetic with which the era of surgical anæsthesia opened, and to abandon those that have so oft endangered life."

Entéroplexie.

Ramaugé, of Buenos Ayres, under this heading publishes in an interesting monograph (Buenos-Aires, Jacobo Peuser, 1893) the results of his experiments with an "enteroplexe" of his own invention. The instrument is made of aluminium; in form, it is made of two rings having rounded edges. At either extremity of one of the diameters are two slight elevations; in one ring (the female) there is a depression into which catches on the other (the male) are inserted. These catches fix the rings together in absolute position and leave sufficient space between for the soft tissues. The diameter of the rings is variable, and should be that of the calibre of the intestine, but this is not absolutely necessary. The application of the instrument is described at the following stages: 1. The introduction of the rings into the ends of the sectioned bowel. 2. The intestine is folded in over the rings, and held in place by four sutures which have been previously passed, two through each ring. 3. The fitting together of the two rings, the catches on the male ring fitting into the cavities in the female. The space between the two rings being equal to the thickness of the intestinal wall, and the two walls being compressed between them, there must be, and is, considerable pressure; this is sufficient to preclude all hemorrhage and the escape of intestinal gases and fluids, and will, by the time adhesions are sufficiently strong, produce necrosis and the sloughing of the included portions of the gut; this will release the rings and they will then pass easily out through the intestine. The author draws the following conclusions from his work: 1. Enterorrhaphy is a tedious and difficult operation, with an enormous mortality. 2. Enteroplexy requires but little time; it can be done by any physician, and produces a perfect cicatrization. 3. The cicatrix is small, linear, and does not cause a lessening of the intestinal calibre. 4. The "enteroplexe," on account of its weight, its form, and its volume, does not endanger the intestine, and is easily passed. 5. The indications for this operation are numerous, and this instrument is applicable to them all. 6. The experiments on animals give remarkable results. 7. This operation is the desideratum of gastro-intestinal surgery.

A Successfully Operated Abscess of the Spleen.

Sendler (*Deutsche Zeitschr. für Chir.*, 1893, Bd. xxxvi., Heft 516) reports a case of abscess of the spleen, in a child four years old, which was cured by operation and drainage, the patient leaving the hospital thirteen days after operation. The abscess was of slow formation, and was situated in the lower portion of the spleen. At the time of the operation this organ was closely adherent to the abdominal wall, the pus had passed through the capsule and would soon have found its way out. The etiology of the case was not so

plain; there was no predisposing cause to be found, and the only exciting cause known was a slight fall which did not put the patient to bed. The symptoms were very indistinct, and there were scarcely any that made a certain diagnosis possible. Those symptoms which have generally been said to accompany this condition were for the most part absent; the only one present was that of the slight peritonitis which caused the adhesion to the abdominal parietes. The only therapeutic measure that could be applied was operation and the free evacuation of the abscess.

A Contribution to the Treatment of Ectopia Vesicæ.

Berg (*Nordiskt med. Arkiv*, Band iii., Häft 3, p. 93) details a new method for the repair of this defect, and reports in detail nine cases which he has operated on since 1886. He has modified the autoplastic method by forming from one or other of the inguinal regions, at a preliminary operation, a flap sufficiently large to cover the opening and form the anterior wall of the bladder. Taken from this region the flap has the advantage of having less hair than from any other. The cut surfaces he covered with epidermis according to Thiersch's method, and by a second operation formed the anterior vesical wall of this double-surfaced skin flap. The results were favorable, with no tendency to lithiasis. His conclusions may be briefly stated as follows: 1. All cases of ectopia vesicæ are not amenable to the same treatment. 2. The desired result is to procure for the patient a natural receptacle for the urine as approximately near the normal as possible. 3. The most benign method, wherever it is possible, is to unite the edges of the vesical walls in the median line without any preliminary operation. Slight abnormality, with a capacious bladder and healthy mucous membrane, are indications for this method. 4. When the diastasis is greater, this method is not possible. It is not in these cases possible unless an operation be first performed on the pelvic arch. The experience is yet wanting in this method to make it one indicated, but it surely should only be done in the first two or three years of life. Trendelenburg's synchondrosiotomy, as well as the author's operation of iliac osteotomy, have given positively pleasing results. The author feels that his operation gives more solidity to the pelvis; he, however, reserves this operation for healthy, vigorous individuals, as it certainly augments the danger of operation. 5. There are a number of cases in which the plastic operation is indicated. These indications are—great thickening of the vesical parietes or a papulous degeneration that renders firm suture impossible, or where it would reduce the size of the bladder too much. Also in cases where the age or condition of the patient make the more formal operation impossible, or where that operation has failed. Autoplastic operation, with this author's modification, seems in most cases to be the one he would prefer.

The Reunion after Tenotomies.

After experimenting on the 112 tendines Achillis of 56 guinea-pigs, operating upon them by Viering's open method, and making microscopical examinations at periods varying from one to ninety days, Enderlen (*Arch. f. Chir.*, 1893, Band xlvi., Heft 3) comes to the following conclusions:

1. The restitution of an incised tendon, as has already been proved, is

participated in by the tendon cells and the peritendineum externum and internum.

2. The injured tendon participates actively in the restitution. The tendon cells increase rapidly; closely following on this process is the formation of tendinous fibrillæ, which spring from the cut surfaces of the tendons toward each other; the two cut surfaces are also drawn together by the fibrillary cells.

3. The final healing of the tendon wound, by which he would understand the joining together of the severed parts by tendinous fibrillæ, occurs on the ninth day. The other changes in the young tendon are simply aging.

4. After severance of a tendon the sectioned portion is not the only part involved in the regeneration, but also the neighboring portions which are expanded. There appear new cell elements mixed in with the old and supplanting it. This process occurs on both cut surfaces, and involves the tendon to some depth, the new elements preponderating near the cut surfaces.

5. The tissue that unites the tendon ends is not distinguishable from tendon tissue—the richness in nuclei only indicating the growing stage.

6. The thickening of the tendons at the seat of injury results from the close packing of the fibrillæ, which is due to the contraction of the fibres after the section of tendon.

THE HEALING OF LARGE TISSUE AND SKIN DEFECTS ON THE EXTREMITIES BY MEANS OF PEDICULATED SKIN-FLAPS FROM DISTANT PORTIONS OF THE BODY.

VON BRAMANN (*Arch. f. Chir.*, 1893, Band xlvi., Heft 3), while believing that the Thiersch method of skin-grafting is very useful for the supplying of a certain class of skin defects, maintains that there are many cases in which it is not applicable. He refers especially to defects upon the extremities arising from accidents, and reports five cases, in two of which, where otherwise an amputation was indicated, he succeeded not only in preserving the limb, but also its functional power. The cases to which he would apply this method of treatment, in preference to the Thiersch transplantation, are those in which, through extensive injury, there exists a wide denudation of joints, or where tendons are exposed or have been sewn after rupture or section. In these cases the only means for preserving the joint or tendons and the functional activity of the limb is by the transplantation of a flap containing the fatty subtegumentary layer, which, on account of the usual destruction of the skin on the member, must be taken from other portions of the body.

For the closure of the wounds produced by the removal of the flaps he would recommend the use of sutures passing through the skin edge and the muscle and fascia of the wound, and tending to decrease the size of the wound; this should not be carried to such an extent as to endanger the success of the Thiersch method in closing the remainder of the defect.

In two of the cases reported there appeared three months after operation a spot of local anæsthesia about the size of a silver dollar. After an exposure to severe cold some time later, these spots were frostbitten, but healed

rapidly. At the time of reporting, both transplanted areas have normal sensibility, with correct localization.

The Results of Occlusion of the Ureters.

Some interesting experiments are reported on this subject by Robinson (*Annals of Surgery*, October, 1893), which lead him to the following conclusions: 1. Complete occlusion of the ureter produces atrophy of the kidney. 2. Partial occlusion produces hydronephrosis; the kidney cavity dilates and its wall thins. 3. The kidney will bear occlusion for some weeks and then resume its function after removal of the obstruction. 4. Urine is secreted until the urine pressure in the ureter is greater than the blood pressure; the high pressure prevents circulation in the glomeruli. 5. The ligature is apt to cut through the ureter wall and produce urinary fistula. 6. The ligature is apt to yield and the urine trickles through, producing hydronephrosis; two ligatures should be thrown about the ureters at some distance from each other. 7. It is probable that three ureters are tied in each one hundred cases of hysterectomy, while many are tied and the fact is not known. 8. Severed ureters should not be made to empty into the small intestine, as the active peristalsis prevents healing. 9. The assertion that the irritation of the ligature will produce suppression of the secretion in the other kidney was disproved. 10. Man has double the amount of kidney required for ordinary use, but when an emergency arises he needs both kidneys.

Inflammatory New Formations due to the Presence of a Foreign Body in the Tissues.

Thiéry, in summing up his remarks before the Société Anatomique (*Bull. de la Soc. Anat. de Paris*, 1893, No. 18) says: Foreign bodies when introduced into the body produce different results according to their septic or aseptic condition. Aseptic bodies are generally tolerated without noticeable reaction of the cellular tissues, save certain irritable liquids or bodies that produce sclerosis. Septic bodies can produce an acute inflammation, which terminates by abscess formation or fistulæ if the foreign body remains behind. It may, however, remain *in situ*, irritating the connective tissue and producing a simple induration or connective-tissue neoplasm.

Eight Cases of Hydatid Cysts of the Abdomen.

Llobet (*Revue de Chirurgie*, October 10, 1893), after reporting eight cases of hydatid cysts of the abdomen, with one death, remarks that the choice of procedure in the treatment of hydatids of the abdomen, and especially of the liver, is the immediate incision or method of Lindemann-Landeau. In reality, the only other methods to be mentioned with it are that of puncture and double incision, or that of two stages. Both of these present inconveniences or dangers. The first is inefficient in cases of multilocular cysts, and dangerous when the cysts are situated deeply. It does not allow of the detection of other cysts in other neighboring organs, and in such cases is merely a palliative method of treatment, and the injections of antiseptic fluid may give rise to poisoning. The second, or method of

Volkmann, offers great security, but, on the other hand, does not allow exploration. The death reported occurred in a case of relapse treated by puncture, and the author thinks his results show that the method of immediate incision and drainage is not so dangerous as has been stated.

A Case of Atrophy due to Traumatism in Infancy.

Ch. Féré (*Rev. de Chir.*, October 10, 1893) reports a case of a man, forty-five years old, who presented himself at the hospital for treatment for epilepsy. He presented also an interesting deformity of the left hand. The personal history showed that at the age of four months he had received a severe burn, superficial and limited to the back of the hand and fingers, but not including the thumb. It was to be expected that this uninjured portion would increase in strength and make up for the loss sustained by the member. This was not, however, the case, as the atrophy present included the thumb with the rest of the hand. The author would draw from this the conclusion that atrophy of the whole extremity may be expected after severe traumatisms received in infancy. The pathology of the disease is in doubt, as other influences, such as fixation, may have entered into the production of the result. The epilepsy was found to be alcoholic in origin.

The Osseous Origin of Certain Tubercular Ulcerations.

Adenot (*Rev. de Chir.*, October, 1893), after reporting three cases of tuberculous ulceration, having for their point of origin the neighboring osseous structure, says, in his *résumé:* Certain lupoidal tegumentary ulcers, having a wrinkled or papillomatous aspect, can easily be confounded with certain malignant tumors of cutaneous origin, in particular those situated upon the hands and feet, in close proximity to the adjacent bone. Their origin is from the bone disease, though the continuity may be broken or may persist.

In the former case, though the osseous disease has healed spontaneously, it nevertheless existed. Oftentimes the bone disease will break out afresh after the cutaneous disease has apparently yielded to treatment. These relapses are certain, and their cause, often not understood, but persistent and tenacious, can only be prevented when the bone lesion has been removed.

The search for and finding of an osseous lesion is often useful in the differential diagnosis of these ulcers from malignant growths.

Two Cases of Congenital Umbilical Hernia.

Berger (*Rev. de Chir.*, October 10, 1893), reports two interesting cases of successful operation for the radical cure of congenital umbilical hernia. The first was a case of embryonal omphalocele in which the hernial contents, the cæcum and colon, were adherent to the envelopes of the cord. The operation was done thirty hours after birth, and the patient recovered. The second case was of a similar character, irreducible, and was not seen till three days after birth; there were adhesions of the cæcum. The operation for radical cure, done more than seventy-two hours after the birth of the child, was successful.

In cases in which the omphalocele extends into the cord and is due to defective development, dating from the embryonal period, of the abdominal parietes, this author advises immediate operation, the method to be used being a laparotomy, in the course of which the hernia is reduced, adhesions of the contents are broken up, the hernial sac in all its layers is removed, and the abdominal wall united by layers of sutures passing through entirely normal and fully developed tissues. Chloroform anæsthesia the author believes to be a necessity, and as harmless as in adult life.

The case should be operated upon as soon as proper assistance and antiseptic and other precautions can be obtained. These should be as complete and careful as in any laparotomy. The only contra-indications to this immediate operation are an arrest of development so great that the abdominal wall cannot be brought together by a plastic operation, and the case of children born too long before term or too feeble. The coexistence of other malformations that do not endanger the life of the child is not a contra-indication, but may taken into account with other considerations. The same is true of other conditions, as imperforate anus, which may be cured by operation, the result of such operation being first ascertained.

A New Method in Gastrostomy.

Pénières (*Arch. Prov. de Chir.*, 1893, tome ii., No. 5), in a series of experiments, deduced the fact that if the wall of the stomach is sewn by stitches, including all the coats except the mucous, into the abdominal wound, there will follow a contracture of the tissues, and a fold of mucous membrane will be formed corresponding to the external wound on the inner surface of the stomach. This he utilizes as a valve, making his opening after it has been formed, and between its folds he inserts a drainage- or feeding-tube which is left in position for some days, and through it the patient is fed. After a time it can be removed, when the mucous folds will act as a valve and prevent the outflow of food. He found the operation successful in the case of a man suffering from impermeable stricture of the œsophagus; the patient lived thirty-two days after the operation.

The Etiology of Carpal Ganglia.

Ledderhose (*Deutsche Zeitschr. für Chir.*, 1893, Band xxxvii., Hefte 1, 2) discusses this subject at length from its pathological, anatomical, and histological sides. His researches on the etiological side of the question lead him to these conclusions:

1. The ganglion takes its origin in the groove found in every normal hand, in which lies, upon the capsular ligament of the joint, a mass of fat and connective tissue that is the true source of origin of the ganglia. After attaining a certain size it seeks the surface, and reaches it generally in front of the ligamentum carpi dorsalis, between the tendons of the extensor indicis proprius and the extensor carpi radialis brevis, or sometimes the extensor pollicis longus; it can, however, reach the skin between any of the other neighboring tendons, or even through the ligamentum carpi dorsalis. The literature shows that by means of a longer or shorter pedicle extending out

over the side these growths may reach the volar side of the wrist-joint. Whether the majority of ganglia of the volar region originate thus is doubtful, but the author's material shows that they can arise directly from the volar aspect.

2. Nothing in his researches tended to prove that the ganglia have, or at any part of their existence have had, any connection with either the joint cavities or the synovial sheaths of the tendons. In no case was either direct communication or a trace of previous indirect communication found between these structures and the ganglia. Nor was there any histological likeness in their structure.

3. The typical ganglia is a new-growth, caused by a jelly-like or colloid degeneration of connective tissues, and the mingling of numerous collections into one. This takes place for the most part in the para-articular tissues, and contusion is usually the determining cause.

From the clinical aspect ganglia have a fixed course of development, come to ripening as it were, and then often heal spontaneously. Clinically he would summarize his results as follows:

1. Ganglia change their size easily; they easily change from deep-seated to superficial growths, while secondary cysts empty themselves into older and more superficial ones, and very thin cysts are easily ruptured and then absorbed.

2. Ganglia pass away easily, leaving no trace behind, or only a small, hard swelling. In advanced life they are seldom seen. When they are ripe they are easily ruptured and absorbed.

3. The frequent relapse as seen after all methods of treatment is due to the formation of other cysts that communicate with the original and occasion refilling. The author advises the leaving to Nature the spontaneous healing, as the best method; but this is not possible in all cases, and in these cases, as well as those where the patient demands a speedy removal of the tumor, he advises excision, with incision of all the surrounding structures, or incision, curetting, and packing with tampons.

A Successful Resection of the Thorax and Lung.

Müler (*Deutsche Zeitschr. für Chir.*, 1893, Band xxxvii., Hefte 1, 2), reports an interesting case of the removal of a large malignant growth from the right thoracic wall, which had involved the lung and required a resection of the lung and suture to complete the operation. The patient recovered and is now well three years after the operation, with one slight return of the disease *in situ* two years since. The author found that the symptoms of collapse, so often described, that come on when the lung collapses were entirely removed by lifting the tumor and lung into their normal relations, and that after the tumor was removed, the lifting of the lung into normal position and holding it there prevented the recurrence of the collapse. The same effect was produced after the wound had been closed, except for drainage, by packing this opening with iodoform gauze. The author advises asepsis instead of antisepsis in operations of this character. He believes that these tumors are operable, and that the results obtained make it for the patient's interest to be operated upon.

To prevent collapse, all the ordinary means should be at hand and should be used, and the collapsed lung should be brought back and kept in contact with the thoracic wall, and the drainage procured through iodoform packing.

Gastrostomy by Witzel's Method.

Keen (*Annals of Surgery*, December, 1893) reports an interesting case of gastrostomy by this method, which he believes to be the best now known. The patient suffered from malignant stricture of the œsophagus. The operation proved entirely satisfactory, the tube was retained with no leakage, the wound healed perfectly, and the patient gained rapidly in strength, which continued. The patient was doing well three months after the operation, and there had been no leakage.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

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Croup.

The *Brooklyn Medical Journal* for August, 1893, devotes considerable space to the subject in various bearings. Dr. William Madden extols treatment by exposing the patient to the fumes produced by the sublimation of calomel, which he states was first used for that purpose by Dr. Corbin, of Brooklyn, in November, 1874.

On the subject of intubation is a commendatory paper by Dr. George McNaughton, with an elaborate table of statistics of 2417 instances of tracheotomy with 586 recoveries, 70 of which operations (with 11 recoveries) had been performed subsequently to intubation; 5546 instances of intubation with 1691 recoveries; 505 instances of calomel sublimation, with 275 recoveries; and 85 tracheotomies or intubations (with 29 recoveries), subsequent to sublimations.

Dr. Lewis S. Pilcher discusses the comparative value of tracheotomy and intubation for the relief of acute laryngeal stenosis in children, and while arguing that tracheotomy is more effective than intubation, admits that by intubation many lives are saved which would otherwise perish from refusal of surgical operation.

It is to this latter class of cases that he very justly, as the compiler believes, would restrict the indications for the preference of intubation in the presence of conditions favorable for the proper performance of tracheotomy and due supervision afterward.

Lymphoid Growths in the Vault of the Pharynx.

Dr. Thomas R. French, of Brooklyn, contributes a valuable paper (*Brooklyn Medical Journal*, 1893, No. 6) on this theme. The macroscopical appearances in position, the facial expressions of the patients, the minute pathologic anatomy of the specimens removed, and the details of operation are exquisitely illustrated, largely by photographic reproduction. Dr. French wraps children in a blanket, etherizes them, binds them to a chair tilted backward, raises the chair slowly to the upright position, places a mouth distender in position, draws the palate forward, and removes the mass piece by piece with cutting forceps.

Laryngectomy followed by Voice without Artificial Appliance.

Last May, at the meeting of the American Laryngological Association (*Medical News*, Philadelphia, June 3, 1893), the editor of this department exhibited a man from whom, fourteen months previously, he had removed the larynx and the first ring of the trachea for carcinoma, and whose second, third, and fourth rings, which had been incised anteriorly in a preliminary tracheotomy, he had stitched to the integument, thus completely shutting off the trachea from the pharynx. This man had learned to speak with a well-modulated voice audible more than forty feet, and sang before the Fellows a few stanzas, in which the changes of pitch of the voice were quite as good as those of a normal voice during hoarseness. The patient distends the integument above the tracheal orifice into a sac of air which he propels against two folds at the lower portion of the pharynx, and which appear to be portions of the lower constrictor muscles. The modulation of the voice points to muscular tension in the new phonal reeds, which would hardly occur were they mere favorably located folds of adventitious tissue. At the date of writing this record, eighteen months after the operation, there has been no sign of recurrence. The man is strong and happy, breathes without a canula, and has been thus far permanently freed from pain, cough, and difficulty in swallowing. Recently, in meeting a patient treated palliatively by tracheotomy, and whose voice is hardly audible, he stated that he would not change conditions for the world, as he would not care to live with his tumor and his tube.

Prof. P. Poppert, of Giessen, reports (*Deutsche med. Wochenschr.*, 1893, No. 35) a case in which he performed an operation similar to the one above alluded to, but different somewhat in detail. The trachea, however, was stitched to the skin and cut off from communication with the pharynx. Immediately after the operation the patient was able to make himself understood in whispers, similar to those made by patients with occluded larynges. He was also able to swallow liquid nourishment at once.

The voice improved in strength, but still retained its whispering character at the time of report, one year later. Poppert refers to the case observed by H. Schmid (*Arch. f. klin. Chir.*, Bd. xxxviii. p. 132), in which a loud so-called pseudo-voice was produced in a case in which communication between trachea and pharynx had been cut off. This case was recently exhibited to

the Medical Society of Berlin (*Medical Record*, New York, 1893, vol. xliv., No. 13), but the manner in which the voice was produced does not appear to have been solved satisfactorily.

These three cases seem to warrant the suggestion of Schmid and Poppert, that an artificial larynx is not necessary for voice after laryngectomy, while the shutting off of the pharynx from the trachea immediately after the operation secures the patient from aspiratory pneumonitis, and thus improves his chances for recovery. At any rate, they are remarkable instances of the ability of Nature to restore function by substitutive structures, after removal or disorganization of the structures proper to the function.

In a case of carcinoma in which the writer removed one vocal band after section of the larynx, voice was restored by substitutive structure, and remained good for twenty-five years, or up to the patient's death from paralysis.

Certainly, security from infection of the air-passages, ability to breathe without a canula, and the prospect of a voice far better than can be supplied with an artificial contrivance, are objects worth striving for, and therefore this method of operation should be repeated until its actual value has been determined one way or the other.

Intubation in Stenosis of the Larynx.

Dr. Rosenberg has reported eleven cases (*Deutsche med. Wochenschr.*, 1893, No. 35):

1. Hysteric contracture of adductors. Improvement until subglottic reaction followed an unskilful attempt to introduce the tube, and prompt tracheotomy became necessary.

2. A similar case. Cure after five daily repetitions of intubation.

3. Syphilitic stricture previously treated with Schroetter's bougies. Failures to destroy granulation membrane by scraping, electric cauterization, and the like. Cure by intubation in a short time, so that the patient has lived without his canula for a year.

4. A similar case. Intubation early in the treatment rendered tracheotomy unnecessary.

5. Subglottic laryngitis with intense dyspnœa. Intubation restored free respiration within two days, but then the tube had to be removed on account of cyanosis produced by occlusion of its calibre.

6. Multiple papilloma of larynx. Intermittent intubation. Every time the tube was introduced small particles of papilloma were coughed out, freeing the respiration at once.

7. Multiple papilloma in a child aged six years. The dyspnœa was relieved after three intubations.

8. A tracheotomized case of tuberculous arytenoid perichondritis. After two intubations the left vocal band, heretofore fixed in the median line, became somewhat mobile.

9. A child four years of age, tracheotomized for diphtheria, who could not be freed from his canula. Cured by three days' continuous intubation.

10. A membrane between the vocal bands anteriorly; the result of a lance-wound of the larynx. Electric destructive cauterization and subsequent intubation was followed by a brilliantly favorable issue.

11. Bilateral paralysis of posterior crico-arytenoids, with acute inflammatory manifestations. Intubation with frequent coughings out of the tube and reintroductions. Tracheotomy eventually necessary.

Paralyses of the Larynx.

Onodi reported, at a meeting of the Laryngological Society of Berlin, July 17, 1893 (*Annales des Mal. de l'Oreille, etc.*, 1893, t. xix., No. 8), an interesting case of bilateral aneurism of the aorta in which the vocal band of the right side was immobilized in the cadaveric position, while that of the left side was practically in the middle line. Section showed that the right recurrent nerve was injured in its totality by the aneurism, while the left recurrent was compressed only in part by the aneurism of the left side.

Onodi had succeeded in preparing the muscles, isolated with their nerves detached, and had submitted them to microscopic examination. He had recognized a degenerescence of all the muscles and nerves on the right side, while on the left the most serious alterations had implicated the posterior crico-arytenoid muscle and its nerves; the internal thyro-arytenoid muscle having been implicated to a less degree, and the lateral and transverse to a still less extent.

Chronic Œsophagitis.

Dr. Samuel Lodge, Jr., reports (*Journal of Laryngology*, 1893, vol. vii. No. 9) the case of a married lady twenty-four years of age. The main symptom was pain after swallowing solids, usually continuing for at least twenty-four hours, and felt over the front of the left chest, radiating toward the left scapular angle. Freedom from pain required abstinence from solid food. Liquid diet for a fortnight, with the administration of bismuth lozenges, produced benefit, but the patient did not think the latter did any good, and they were discontinued. Light farinaceous food with eggs and jellies was permitted, and three months later tripe, minced meat, and the like. In six months the ordinary diet could be resumed, but very hard morsels still produced some discomfort in deglutition.

Lymphoid Nodules at the Vault of the Pharynx.

It is well known that the embarrassed respiration produced by hypertrophic conditions of these structures impairs physical development, and that the stunted patient often grows rapidly after removal of the morbid structures.

Mr. Percy S. Jakins reports (*Journal of Laryngology*, 1893, vol. vii. No. 9) a remarkable instance of the kind, in which a lad five feet three and a half inches in height at seventeen years of age, increased to five feet ten inches within two years after removal of enlarged adenoids and tonsils, and increased proportionately in weight. His brothers had attained a height of six feet before they had reached his age.

OBSTETRICS.

UNDER THE CHARGE OF

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VERSION WITH ONE FOOT.

NAGEL (*Archiv für Gynäkologie*, Band xliv., Heft 1) contributes an article relative to version with one foot, and discusses which one is best to bring down first. As a result of his observations in thirty cases of his own, and from a consideration of many reported by other authorities, he concludes that in order to complete version of a child *in utero*, it is indifferent which foot is seized. If one has in view the fact that the drawn down and extended leg shall lie, immediately after complete version, forward, behind the symphysis, one will generally obtain this if the *under* leg in dorso-anterior and the *upper* one in dorso-posterior position is drawn down. If there has been produced through version an incomplete foot presentation with posterior leg extended, it will probably turn forward in such a manner that the back of the child slides by the promontory. If in such cases as the one last mentioned, it is necessary to hasten the birth of the child, such turning of the breech of the child on its long axis must be favored, as will bring the extended leg forward.

DECIDUO-CELLULAR SARCOMA AND DECIDUAL TUMORS.

SÄNGER (*Archiv für Gynäkologie*, Band xliv., Heft 1, p. 89) takes as his text the case of a married woman aged twenty-three years, who, after an injury received in stepping from a railroad train, aborted incompletely in the eighth week of gestation. She suffered from hemorrhage continuously for three weeks, at the end of which time fever ensued, with symptoms of septicæmia. The uterus was curetted, after which the fever and hemorrhage ceased; but the pulse remained about 100. The woman was confined to her bed for five months, the convalescence being protracted by a diffuse parametritic exudation. A progressive enlargement of the uterus was now noticed, without tenderness and purulent discharge, and the patient was compelled to return to bed on account of fever and severe pain in the left hypochondrium. Soon there suddenly appeared in the right iliac fossa a soft, elastic, painful tumor as large as a goose-egg. This was suspected to be an abscess occurring during a chronic septic infection, and on this supposition was opened. No

pus was found, but a fungoid, spongy mass which was removed with the fingers and sharp spoon, exposing the bone beneath. Under the microscope the removed tissue consisted of cellular débris, with large nucleated round cells intermixed with small spindle-shaped cells and numerous small apoplexias. No tubercle bacilli could be found. There were no signs of pulmonary tubercular infection. The uterus was now as large as in a normal pregnancy of three or four months' duration. The patient was sent to the surgical department, but, owing to the uncertainty of the diagnosis, no operation was performed. She became rapidly dyspnœic, and finally died from exhaustion. At time of death there was orthopnœa.

The autopsy showed the uterus adherent on left side, and filled with spongy, dark-purple masses varying in size from a nut to an apple. Masses were classified as sarcoma telangiectodes, and most resembled mycosis fungoides of the skin. The uterine mucous membrane was not penetrated by the diseased masses. Metastatic masses were found in the iliac fossa, lungs, diaphragm, and ribs The microscope showed in the tissues small hemorrhagic foci and large nucleated round cells closely resembling the giant decidual cells; these latter seemed the earliest and simplest elements. The decidua apparently was the starting-point, the abortion being perhaps the initial lesion.

The forms of sarcoma now recognized may all be traced back to cells of mesoblastic origin and their products. Sarcomatous degeneration of the cells of the inter-glandular tissue of the mucosa uteri, according to Virchow, is divided into globo-cellular, fuso-cellular, and myxo-sarcoma, together with a mixed formation—sarcoma carcinomatodes. To these should be added sarcoma deciduo-cellular, sarcoma of the mucosa uteri transformed into decidua. In ectopic pregnancy, as is well known, the connective-tissue cells of the mucous membrane and muscular coat of the tubes, together with the serosa peritonei, undergo this transformation. During pregnancy the tissues of the sexual organs receive an immense impulse toward new formations, and conditions obtaining in the fœtal tissues may be impressed upon and transplanted to those of the mother. There may also be an infection of micro-organisms, as in many cases infectious disease of the decidua preceded the swelling. The diagnosis is based on the hemorrhage and ichorous discharge. These symptoms following a shorter or longer time after birth would make one suspect the presence of a deciduo-cellular sarcoma, especially if they return after complete evacuation of the uterus of all fœtal remains. A microscopic examination of fragments taken from the uterus by the finger should be made.

Regarding treatment, the author states that this variety of sarcoma is regarded as malignant; its early and accurate diagnosis is therefore of great importance. Complete extirpation is the only treatment worth attempting.

Recurrent Tubal Pregnancy in the Same Woman.

Abel (*Archiv für Gynäk.*, Band xliv., Heft 1, p. 55) contributes an article on the above-named subject. In regard to the causation of recurrent or single tubal pregnancy, most authors ascribe it to causes other than affections

of the tubes, and some even regard the contractions of their lumen as secondary in importance. Virchow assigns as a cause peritonitis and pseudo-membranous adhesions with constriction of the affected tube. Spiegelberg speaks of swelling of the tubal mucous membrane and obstructive collection of secretions. Klob mentions hernia of the mucous membrane and consequent arrest of peristalsis; or polyps of the uterine end may obstruct the ovum in its passage. It is also said that deficient, or absent, motion of the cilia is a cause of delay in the passage of the ovum, so that it finally grows too large for further progress. Any or all of these causes may at times be present, but they are not sufficient to account for a double recurrent tubal gestation. An abnormal formation of the tube, due to defect in embryonic development is the common source, and it affects both tubes equally. Freund's researches have shown that the tubes, after the union of the middle parts of Müller's ducts has formed the uterus, show a spiral, corkscrew-like twist, involving the whole tube. This occurs during the descent of the duct. When this has reached its greatest length, the turns begin to smooth themselves laterally from the uterus. These turns may remain as a permanent arrest of development, the surroundings being in no way involved and no trace of perisalpingitis or pelviperitonitis can be found. The condition may be often seen in the bodies of children. Thus any healthy woman is liable to a tubal pregnancy from her tubes remaining in an infantile state and the pregnancy be physiological. Again, the tubal canal does not always run in the middle of the tube cylinder; its course may be most devious, approaching and receding from the surface of the tube, which thus having walls of unequal thickness and resistance, the growing ovum distends it at the point of least resistance, and may thus be arrested in its progress. Another antecedent cause may be found in the so-called diverticulum of the tubal canal. The ovum may be entangled therein. To establish a diagnosis of single or recurrent tubal pregnancy, special importance attaches to the extension of a decidua from the uterus, though its absence is no proof that the gestation does not exist. A microscopic examination of the membrane is essential, though it is not certain that from it its extra-uterine character can be determined certainly. In various conditions membranes are thrown off from the uterus, thus: 1st. In extra-uterine pregnancy. 2d. Dysmenorrhœa membranacea. 3d. In intra-uterine pregnancy with abortion. In the first, the cellular part of the gland layer is fully differentiated, the inner layer is extended, the outer remains in the uterus. In the second, all the elements of the normal mucous membrane are cast off. On its surface is normal epithelium; the deep glands have their epithelium unaltered. All sorts of cells are found in their connecting tissues, and foci of infiltration abound. In the third, one finds either ovular débris or membranes showing the unmistakable evidences of pregnancy. The chief difference between the decidua of extra-uterine pregnancy and that of dysmenorrhœic membrane lies in the presence or absence of glands.

The treatment of this condition is laparotomy and removal of the sac. At the time the other tube should be examined, and if found to be spiral or twisted it should also be removed. Neither injection of the sac nor electro-puncture gives any positive assurance that subsequent rupture and hemorrhage may not occur.

Uterus Subseptus.

Cepinsky (*Centralblatt für Gynäkologie*, 1893, No. 33) reports the details of an interesting case of a double vagina in a woman twenty-six years of age. Menstruation regular. On examination the external genitals were found normal. The introitus vaginæ was not median, but by the side of the right labium majus. Hymen gone. Near the introitus was discovered a second opening 50 mm. broad, surrounded by a fringe of mucous membrane, through which a sound was passed into a second vagina, narrower than the first, but otherwise perfect. From either a sound could be introduced into the uterus, each vagina having a separate and perfect portio vaginæ uteri. Whether the division that completely separated these vaginæ extended throughout the uterine cavity could not be determined. The uterus was of normal size. Coitus easy and normal. A year later the patient returned for advice, complaining of irregular hemorrhage from the genitals accompanied by uterine pain. Had not menstruated for ten weeks. Examination showed the old anomaly with bleeding from the small opening of the left vagina. In the right vagina the os was open and there was hemorrhage therefrom. As the vaginal vault was pressed with the speculum a segment of fœtal membrane was observed to pass out of the os. Corpus uteri enlarged and soft. Abortion occurred on the following day, the ovum being the size of a plum, and in it an embryo three centimetres long was found. Ten days after the abortion, for experiment, milk was injected through the left cervix into the uterine cavity and this was observed to flow out through the right os.

GYNECOLOGY.

UNDER THE CHARGE OF

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The Curative Effect of Cœliotomy on Peritoneal Tuberculosis.

Warnek (*Centralblatt für Gynäkologie*, 1893, No. 50), after reviewing all the evidence in favor of the cure of tuberculous peritonitis by simple abdominal incision, with or without drainage, arrives at the conclusion that whenever the cavity is opened the peritoneum undergoes a certain amount of irritation, due to the change in its physiological condition caused by the entrance of air and the lowering of its normal temperature. In the case of various manipulations of the abdominal contents, by irrigation, sponging, the separation of adhesions, etc., an additional element of irritation is introduced, which is manifested not only by congestion of the serous surface, but by the subsequent formation of adhesions, which may in time be entirely absorbed, as shown by secondary operations. It is well known that in cases of ascites due to secondary papillary or carcinomatous growths on the peritoneum, the fluid may

quickly reaccumulate after several tappings, but when an exploratory incision is made this may not occur, although the conditions remain unchanged. Hence the following conclusions may be drawn: After the abdomen has been opened in a case of tuberculosis and the peritoneum has been irritated by manipulation, a plastic exudate is thrown out and adhesions are formed. Provided that no conditions are present favorable to their further development, the bacilli are destroyed by this exudate and the tubercles undergo fibrous degeneration. In the course of time the exudate is absorbed and a cure of the disease results.

New Method of Treating Peritoneal Tuberculosis.

Nolen (*Berliner klin. Wochenschrift*, 1893, No. 24), being convinced that the favorable results observed after cœliotomy are due to the simple contact of air with the peritoneum, has conceived the idea of introducing air into the abdominal cavity through a needle. He reports three cases, two of which were successful. In these, repeated tappings had been employed, but the ascitic fluid always reaccumulated, until air was pumped in by means of an apparatus devised by the writer. A third successful case is reported by Mosetig-Moorhof.

Treatment of Sterility.

Seeligman (*Münchener med. Wochenschrift*, 1893, No. 45) has found that in his experience the husband is in fault in 75 per cent. of the sterile marriages, through azoöspermia due to double epididymitis. That the latter condition is not necessarily hopeless was shown by the reappearance of living spermatozoa in the semen after treatment. He recommends the active treatment of gonorrhœal epididymitis as soon as possible after the inflammatory stage, with a view to prevention.

The application of galvanism to the cervical endometrium is often successful, as well as the use of the faradic current in cases where there is entire absence of sexual response on the part of the female.

The Action of Salicylic Acid on the Uterus.

Binz (*Berliner klin. Wochenschrift*, 1893, No. 41) states that salicylate of sodium has a beneficial effect in cases of dysmenorrhœa and scanty menstruation not due to chlorosis. In gouty subjects it is indicated in cases of menorrhagia, as well as in patients who are prone to early abortion.

Vagino-fixation of the Uterus.

Knorre (*Centralblatt für Gynäkologie*, 1893, No. 51), in an extended article, reports the results of a series of twenty-four cases operated upon in Küstner's clinic according to Mackenrodt's method. Of these only nine were entirely successful. He regards the operation as indicated in all cases of retroversion with a movable uterus that cannot be kept in position by a pessary, especially when there are accompanying lacerations of the cervix and perineum; also when the patient cannot tolerate a pessary. It is contra-indicated in

prolapsus, in retroflexion with fixation, and in cases in which a cure can be expected with a pessary.

New Operation for Stenosis of the Os Uteri.

Pozzi (*Annales de Gynécologie et d'Obstétrique*, December, 1893) describes the procedure thus: He first divides the cervix on both sides with scissors, then excises a wedge from each flap on either side of the canal—four in all. The mucous membrane of the vagina is united to the mucosa of the cervical canal with silver-wire sutures in such a way as to close the four raw surfaces. The result is a condition similar to that of an ordinary bilateral laceration, but without the formation of cicatricial tissue and the disturbances to which this gives rise.

Fibromyoma of the Ovary or Broad Ligament.

Delegrange (*Archives de Tocologie et de Gynécologie*, 1893, No. 12) reports a case of fibromyoma of the ovary weighing nearly seven pounds. The tumor was adherent and the pedicle was twisted several times about its long axis. On section the growth showed hemorrhagic softening. There was some doubt as to whether it originated in the ovary or in the broad ligament. The writer gives the histories of six reported cases of pedunculated fibromyoma of the broad ligament, from which he makes the following deductions: Ascites was seldom present to any extent. In most cases the tumor grew rapidly and was accompanied by severe pain, probably due to the presence of adhesions. The differential diagnosis from ovarian fibroma, or even from pedunculated uterine fibroid is practically impossible. The surgical treatment of these neoplasms presents no special features.

Pseudo-membranous Enteritis from a Gynecological Standpoint.

Monod (*Ibid.*) concludes an article on this subject as follows: 1. Pseudo-membranous enteritis is frequently observed in connection with disease of the uterus and adnexa. 2. It affects the large intestine and gives rise to chronic constipation with colicky pains. 3. It may coexist with membranous dysmenorrhœa. 4. Sometimes it seems to be due to compression of the rectum by the retroflexed uterus. 5. In some instances it seems fair to infer that it is the result of the extension of an inflammatory process from the uterus or peri-uterine tissues. 6. The possibility of its existence should be borne in mind in all cases of intractable abdominal pain in patients with pelvic trouble. A careful study of the symptoms will show that these are often due not to disease of the uterus or adnexa, but to the intestinal tract.

Treatment of Inflammation of the Adnexa.

Jacobs, of Brussels (*Ibid.*), reports eighty-six cases of cœliotomy for disease of the adnexa, with five deaths; and one hundred and forty cases of vaginal extirpation of the uterus, with diseased tubes and ovaries, with only two deaths. In the former series the result was only partly successful in thirty cases, while in the latter he obtained a cure in one hundred and

twenty-nine cases. The only accidents accompanying the vaginal operations were two cases of perforation of the bladder and one of the intestine, all of which healed perfectly after suturing. There was one case of permanent vaginal fistula, one of dementia, two of adhesion of the bladder, and four of obstinate gastro-intestinal trouble. The writer remarks that these statistics are "sufficiently eloquent in themselves."

His technique in the removal of unilateral disease of the adnexa is briefly as follows: The posterior vaginal fornix is incised transversely with the thermo-cautery knife. Preliminary curettage he regards as unnecessary. The peritoneum is then torn through with the finger and the exact condition is ascertained by palpation. The diseased adnexa are then enucleated, the writer believing that he can separate firm intestinal and intra-pelvic adhesions more easily than through an abdominal incision, the advantage being that it is not necessary to penetrate a layer of adherent intestines (*dôme intestinal*) before reaching the tubes and ovaries. If the uterus is retroflexed and fixed, it should first be detached. When the tube and ovary on one side occupy Douglas's pouch, their removal is easy; it is more difficult when they are adherent to the anterior surface of the retroflexed uterus. After they are freed, they are drawn down into the vaginal wound with two fingers and are seized with forceps. Clamps are then placed on either side of the mass and it is excised. The clamps are left *in situ* for forty-eight hours with a dressing of iodoform gauze. The patient is usually up on the fourth (!) day, and is ready to be discharged on the tenth or twelfth. These results present a striking contrast to the convalescence after abdominal section.

The writer is a strong advocate of extirpation of the uterus in double salpingotomy, not only because the organ is the original seat of gonorrhœal infection which still resides in the endometrium, but because it is useless to the patient after the removal of the adnexa. In the cases before mentioned in which hysterectomy was performed, in ninety-seven the adnexa were entirely removed, and in twenty-seven partially; in sixteen hysterectomy *par morcellement* was done. He has tried all the palliative methods, especially that of incising and draining pus tubes *per vaginam*, which latter he found unsatisfactory on account of the tendency to the formation of a persistent fistula. The indications for the different operations are thus summarized: In the initial stage of salpingitis secondary to ordinary septic infection, before the tubes have become encysted, elect curettage with drainage; some cases of purulent salpingitis may be cured by the same method, through drainage into the uterine cavity. Pyosalpinx is to be treated either by vaginal incision, or better by vaginal extirpation. Gonorrhœal salpingitis is to be treated by vaginal extirpation with accompanying extirpation of the uterus.

[This paper well repays careful study; not only are the statistics remarkable, but the writer's candor, enthusiasm, and clear, virile style are most attractive.—H. C. C.]

The Prognosis and Treatment of Vulvo-vaginitis in Children.

Rocaz (*Ibid.*) calls attention to several direct consequences of this condition, such as ulceration of the labia, purulent conjunctivitis and otitis, and joint affections. The general health may be seriously affected. Peritonitis

may result through extension of the inflammation, several cases having been reported in infants. It is probable that the endometrium is liable to become infected in girls at puberty, from a latent vaginitis of long standing. In regard to the local treatment the writer calls attention to the fact that the ordinary applications, astringents, antiseptics, etc., relieve but do not cure the affection, since they do not reach the seat of the trouble within the vagina. Medicated crayons containing iodoform, salol, thallin, etc., are not only painful to the little patient, but may cause added irritation. He employs vaginal injections of permanganate of potassium, beginning with a solution having a strength of 1 : 4000, and increasing it up to 1 : 1000. The child is placed on her back across a bed and a rubber male catheter is introduced into the vagina, through which is injected a pint of the solution. The operation is not painful and is well borne by the patient. A slight increase in the discharge will be noted at first, but it soon begins to diminish and disappears entirely within from two to four weeks, during which time the injections are repeated thrice a week. Several successful cases are reported.

The Use of Chloroform in Gynecology and Obstetrics.

Brennecke (*Münchener med. Wochenschrift*, 1893, No. 1) reaches a different conclusion from many observers with regard to the action of chloroform on the kidneys. He calls attention to the fact that where the patient has no bad symptoms after anæsthesia, albumin is invariably absent from the urine, and *vice versa*. Serious renal troubles may develop after the administration of chloroform in patients who showed no previous evidences of the same. Albumin and casts (nearly always hyaline) usually disappear from the urine within a few days, coincident with the disappearance of unfavorable general symptoms, such as nausea, loss of appetite, etc.

The writer concludes that chloroform should be administered only when it seems to be absolutely necessary, and that it is contra-indicated in cases of renal disease. With the exception of fatty degeneration, he thinks that its use is attended with less danger in organic cardiac than in renal affections. He furthermore advises that its use in midwifery be limited, and that it be excluded in the treatment of eclampsia (?).

Post-partum Ovariotomy.

Lawrence (*British Med. Journal*, Sept. 16, 1893) argues in favor of ovariotomy during pregnancy, as soon as the tumor is discovered, on account of the low rate of mortality and the increased risk during parturition. He reports ten cases in which the existence of the cyst was not suspected before labor had begun. In every instance rotation of the cyst and peritonitis occurred; in one the cyst ruptured. The patients nearly all had symptoms of peritonitis following parturition, and all were operated upon successfully. If the cyst is recognized during labor the writer advises delivery with forceps as soon as possible, the accoucheur being prepared to open the abdomen as soon as serious symptoms develop. In their absence, it is better to wait a month before operating.

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

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Disinfection of Sewage with Sulphuric Acid.

Dr. M. Ivanoff (*Zeitschrift für Hygiene und Infectionskrankheiten*, Bd. xv., 1893), following Koch who showed that cholera bacilli are quickly killed in gastric juice, and Kitasato who showed that in bouillon they are killed after some hours by the addition of 0.132 per cent. of hydrochloric or 0.049 per cent. of sulphuric acid, and Stutzer who found that they are killed in a quarter of an hour in distilled water with the addition of 0.05 per cent. of sulphuric acid, interested himself in the problem of the disinfection of sewage by the same means. On account of the presence of substances which in sewage so treated would combine with and render inert a part of the acid, it was evident that stronger solutions than the above would be required. Sewage of different degrees of foulness was used. With Potsdam sewage, which was three times as foul as that of Berlin, and slightly alkaline in reaction, 0.08 per cent. of sulphuric acid was enough to kill cholera bacilli in fifteen minutes. As compared with other chemicals, sulphuric acid is second in point of cheapness, lime being first.

Action of Sozoiodol Preparations and of Tribromphenol-Bismuth on Cholera Bacilli.

Dr. Arthur Draer (*Centralblatt für Bakteriologie und Parasitenkunde*, 1893) finds, from purely bacteriological experiments with these agents, that the sozoiodol preparations, particularly the acid and the mercury compound, exert a powerful disinfectant power on cholera bacilli, the sodium, potassium, and zinc compounds in lesser degree. The tribromphenol-bismuth, even in double the amount, cannot approach the sozoiodol preparations in activity; it has but a very slight, if any, preventive influence on the development of cholera bacilli. These preparations are put forward as intestinal antiseptics. Tribromphenol-bismuth is a combination of almost equal parts of tribromphenol and oxide of bismuth. Hueppe attributes to it an almost specific action on cholera bacilli.

Cholera Bacteria and Foods.

Dr. Friedrich reports (*Arbeiten aus dem Kaiserlichen Gesundheitsamte*, Bd. viii. p. 465) the results of numerous experiments to determine the duration of life of comma bacilli in contact with various foods and drinks. On

the outer surface of fresh fruits and vegetables exposed to the ordinary temperature of the room, he found that with cherries, gooseberries, white currants, apricots, greengages, plums, damsons, pears, apples, radish-cabbage, onions, and lemons, the duration was one day. With peaches, cucumbers, pumpkins, carrots, two days; spinach and oranges, six days; and cauliflower, from three to five days. On the cut surfaces under the same conditions the results were, with red and white currants and raspberries, one hour; grapes, one to two hours; cranberries, two hours; sour cherries and whortleberries, three hours; lemons and peaches, five hours; oranges, three to twenty-four hours; gooseberries, two and a half to twenty-four hours; apricots, twenty to twenty-four hours; greengages, twenty-four to forty-eight hours; plums, six hours to five days; damsons, two to seven days; pears, one to four days; apples, six hours to seven days; cucumbers, five to seven days; onions, two to four days; carrots, three to nine days; pumpkins, twelve to fourteen days; radish-cabbage, three to eight days.

With drinks the following results were obtained: Unsterilized milk, one to two days; sterilized milk, ten days; tea, one hour to four days; coffee, two to five hours; four kinds of beer, three hours; white wine, five minutes; red wine, fifteen minutes; cider, twenty minutes. In cocoa they were still living at the end of seven days.

With other foods the results were: Fresh fish kept in a refrigerator, two days; smoked herring and salt herring, one day; caviare, exposed to the ordinary temperature, one day, and in the refrigerator, four to six days; Russian caviare under the same conditions, three to six days, and eight days respectively.

Meat Preservatives.

Venzke and Schorer (*Deutsche Fleischerzeitung*, 1893, xxi., Nos. 20, 21, and 24) have made analyses of thirty-eight preservatives for meat, and report their ingredients to be as follows: One proved to consist of salt, sugar, and nitrate of potassium; four of salt, sulphite and sulphate of sodium; four of sulphite and sulphate of sodium; one of salt, sugar, sulphite and sulphate of sodium; one of salt, bicarbonate and nitrate of sodium; three of salt, boric acid, nitrate of potassium, and sulphate of sodium; one of salt, boric acid, and sulphate of sodium; one of salt, boric acid, gypsum, and suphate of sodium; six of salt and boric acid; one of salt, nitrate of potassium, sulphates of sodium and calcium, and cochineal; one of salt and borax; two of salt, borax, and nitrate of potassium; two of of salt, borax, and nitrate of sodium; one of salt, borax, sulphates of sodium and calcium, and salicylic acid; one of borax alone; five of calcium sulphite; one of molasses sugar; and two of borax and sugar.

E. Polenske (*Arbeiten aus dem Kaiserlichen Gesundheitsamte*, Band viii. p. 686) gives his results of further analyses of meat preservatives, seven in number: one consisted of salt, sulphate and sulphite of sodium, choride of iron, and vanillin; one was wholly acid sulphite of sodium; another was a mixture of sulphite and sulphate of sodium; a fourth consisted of salt, borax, and nitrate of potassium. A preservative obtained from American hams consisted chiefly of borax with small amounts of salt and nitrate of potassium.

"Powdered albumen," for sausages, consisted of albumen, non-nitrogenous organic matter, water, salt, and other mineral matter. "Chromosot" was found to contain 90 per cent. of sulphate and sulphite of sodium, with albumen, coloring matter, etc.

Hygiene of Barber Shops.

Dr. A. Blaschko (*Berliner klinische Wochenschrift*, 1893) draws attention to the need of greater care for the prevention of the spread of disease by barbers. The most common, but not as is often asserted the only disease spread by barber shops, is herpes tonsurans. Many other diseases can be caused by shaving or by hair-dressing: impetigo contagiosa, acne varioliformis, trichorrhexis nodosa, certain forms of eczema, alopecia areata, and syphilis. These diseases may be produced directly or indirectly: directly, when the operator himself is diseased; indirectly, when the disease is conveyed to another, either by the hands of the barber or by the implements of his trade —napkins, towels, razors, sponges, shaving-brushes, powder puffs, brushes, and combs.

In consequence of the unusual frequency of herpes tonsurans in Berlin, Köbner, several years ago, recommended the scalding of razors and shaving-brushes, separate shaving-brushes and clean towels for each customer, and separate puffs. In addition, it is advised to decline to serve those upon whom suspicion may rest as possible sources of contagion. In a very small minority of the shops, even of the better class in Berlin, are these recommendations heeded. Blaschko recommends wiping the razor with cotton-wool wet with absolute alcohol, scalding the shaving-brushes, the use of cotton-wool instead of puffs, the cotton used on each customer being thrown away, separate clean towels, or, when these cannot be afforded, the use of Chinese paper napkins. Furthermore, that every barber should have a separate set of instruments for those who are diseased or may be suspected—which recommendation has, of course, no great weight unless the barber is in a position to recognize such cases.

Sanitary Regulation of Pilgrim Fairs.

Mr. M. B. Colah (*Indian Medico-Chirurgical Review*, 1893) advocates the interference of the Government, and prohibition of special trains to prevent the spread of cholera in India. Pilgrimages in India are of frequent occurrence. There are many minor pilgrimages every year, in almost every district, and large pilgrimages occur in various parts of India, which are attended by people from the most distant parts. These have been made much more possible by the improved railway facilities, and the attendance at fairs is always large and sometimes quite unmanageable. When outbreaks of cholera occur at these gatherings many die at the place, and many more return to their homes attacked with the disease, or with its germs in or on them, and the disease is thus widely disseminated. If the localities through which such pilgrims pass are in a sufficiently insanitary state, outbreaks readily occur, and as human intercourse is now much more extensive than ever before, outbreaks of cholera are heard of in the most distant parts of India. The action of the Government is confined to the issuing of notices by the local authorities, in-

forming the people of the danger incurred by attending fairs, and dissuading them from doing so; but this precautionary step is rendered nugatory by the railway companies, who run special trains and pour pilgrims into the place by thousands. Returning pilgrims should be subjected to some kind of sanitary inspection before being allowed to return to their homes from an infected centre.

At Hurdwar, the local authorities made every arrangement for the proper sanitation of the place, and took necessary precautions against the breaking out of epidemic disease during the fair. In spite of due foresight and care diarrhœa prevailed among the pilgrims, and cases of true cholera occurred. The fair was closed, the pilgrims were dispersed, and further arrivals were prohibited; whereupon the priests and other religious classes charged the authorities with having interfered with the religious observances, and the local government felt obliged to appoint a special commission to inquire into the several allegations.

Cholera and Rags.

In regard to the attempt made in the House of Commons to raise again the question of the importation of rags from cholera-infected districts, it is worth bearing in mind that the whole matter was gone into at the Dresden Conference, and that it was then found impossible to lay hands on a single case in which infection could be traced to rags imported in compressed bales as ordinary articles of merchandise. It is quite otherwise in regard to the loose soiled linen of travellers from infected districts, but this does not come under the same classification. It is believed that the rags of merchandise are sometimes years in reaching their final destination at the shoddy mill or the paper manufactory. Not only is it quite unproved that such rags have ever given rise to cholera, but a consistent attempt to stop the introduction of infection by this means would demand an almost permanent prohibition of their importation.—*British Medical Journal*, 1893.

Action of Soaps on Cholera Bacilli in Water.

Dr. A. H. Nijland (*Archiv für Hygiene*, Bd. xviii., No. 4) gives the results of experiments undertaken to determine the influence of soaps on the bacilli of cholera in water. The ordinary soaps exert an injurious effect on the life of the bacilli even in relatively slight proportion. The addition of one and eight-tenths parts per thousand causes in a short time a marked diminution in their number, and in a quarter of an hour they are killed, provided the number present is not excessively large. The addition of disinfectants to the soaps increases their action in some cases, while in others, on the contrary, as when the addition is followed by a union of the constituents of the soap with the disinfectant, their influence is diminished. At the head of the list of disinfectant soaps in point of activity stands corrosive sublimate soap, which kills the bacilli in water within ten minutes when it is present in the extent of only three one-hundredth parts in a thousand. Not all the sublimate soaps in the market are of equal strength. Corrosive sublimate itself has greater power than all the different soaps, including the sublimate soap.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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IMMUNITY: EVIDENCE OF THE CORRECTNESS OF THE ANTITOXIN THEORY DEDUCIBLE FROM THE TREATMENT OF PNEUMONIA.

IT will be remembered that in their first paper upon the induction of artificial immunity to pneumonia the brothers G. and F. KLEMPERER (*Berl. klin. Wochenschr.*, 1891, Nos. 34, 35) recount the results of tests of the therapeutic value of the serum of immunized rabbits in six cases of acute lobar pneumonia. They had previously demonstrated the harmlessness of injections of the serum in healthy persons, and, although the experiments at the time may have appeared somewhat premature, they have been in a measure justified by subsequent experience. In the six cases so treated the temperature fell in from six to twelve hours after the injection in four cases to the normal point, and the rapidity of both pulse and respiration decreased. In two cases the temperature remained normal after the initial fall, but in the others it rose again at the end of six hours or so.

While these results could not be regarded as in any way conclusive, they nevertheless stimulated similar tests by other observers, and we soon after find the report of a case similarly treated by FOÀ and CARBONE (*La Riforma Med.*, 1891, No. 256). In this, the first injection of 5 c.cm. of the blood-serum of an immune rabbit was followed, as in the Klemperer cases, by fall of temperature, pulse, and respiration, and a second like injection on the succeeding day brought about crisis on the fourth day of the disease, with resultant cure.

Following out the same line of experimentation with SCABIA, FOÀ (*La Riforma Med.*) soon got together ten cases of pneumonia in which injections of the blood-serum of immunized rabbits, on the second to the sixth day of the disease, were followed by apparent benefit. The injections were subcutaneous, in the scapular region, and the dosage was from 5 to 7 c.cm. at a time, repeated two or three times. In eight of the cases crisis occurred within twenty-four hours after the first injection; in two, not until the ninth and tenth day of the disease.

It will have been remarked that the experiments heretofore noticed have all been conducted with the blood of immunized rabbits. With a view to testing the efficacy of the serum of dogs, Foà and Scabia employed subcutaneous injections of the serum of a dog whose natural immunity had been reinforced by repeated inoculations of virulent pneumococci, in the treatment of two young persons suffering from pneumonia. In both cases the result was unfortunate, the temperature rising and the general condition of the patient being rather aggravated than improved, showing that the serum of the dog

is unsuited to such experiments. This last result further suggests the possibility of a difference between a natural and an acquired immunity, and that the natural immunity is not dependent upon the constant presence in the blood of an antitoxin, as was at first supposed.

Another series of ten cases is reported by JANSON (*Hygeia*, 1892. Cf. *Centralbl. f. Bakt. u. Parasit.*, 1892, xii., No. 1, p. 42). In these, doses of from 5 to 27 c.cm. of serum of immunized rabbits was introduced subcutaneously into the subclavicular region. In five cases the injections were followed by fall of temperature and other critical symptoms; in three others the temperature fell, but subsequently rose again; in one case, moribund at the time of the injection, there was temporary amelioration of all the symptoms; and in one case there was no evident result of the injection. The fall of temperature occurred in from two to four hours after the injection. Crisis occurred once on the fourth day of the disease, twice on the fifth day, and twice on the sixth.

A further interesting series of experiments is reported by NEISSER (*Deutsche med. Wochenschr.*, 1892, No. 25). Having demonstrated the protective and curative power, as regards the pneumo-septicæmia of rabbits, of the serum of patients convalescent from pneumonia, and having further satisfied himself of the correctness of Klemperer's view regarding the identity of the two diseases, Neisser, with the assistance of Prof. Lichtheim, tested the curative power of the serum of convalescents in other cases of pneumonia.

A young man, in the third day of a typical lobar pneumonia, in whose sputum the presence of virulent diplococci was proved, received an injection in the arm of 130 c.cm. of serum obtained by venesection from a convalescent two days after the crisis. The temperature soon sank, and in the evening became subnormal (97.7°), the pulse and respiration slowed, and convalescence continued without interruption.

A second patient, on the fourth day of the disease, received a similar injection of 70 c.cm. of the serum obtained from the last patient on the second day of convalescence. The temperature fell to the normal point on the same day, and remained normal till the sixth day thereafter, when, with moderate fever, a serous pleuritic exudate formed, but did not return after thoracentesis.

The curative power of this pleuritic exudate having been shown in the case of rabbits suffering from pneumo-septicæmia, it was used in a third case of pneumonia. This developed in the course of a case of influenza, but examination of the sputum demonstrated the presence of the diplococcus pneumoniæ of Fränkel and Weichselbaum. On the fourth day of the disease 50 c.c. of the pleuritic exudate was injected into a vein of the arm. The temperature fell nearly to the normal point, but rose again with the appearance of a small amount of pleuritic exudate, to fall to the normal, however, two days afterward.

In all of his cases Neisser noticed free sweating and slowing of the pulse and respiration as constant accompaniments of the fall in temperature.

We have thus records of thirty cases of pneumonia in which decided benefit seems to have followed the injection of serum of immune animals or of convalescents from pneumonia. If Klemperer's experiments, which resulted in the discovery of the "anti-pneumotoxin" are correct, we may fairly attribute the benefit observed to the presence of this substance in the blood injected,

and we then have in the cases above referred to additional evidence of the correctness of the antitoxin theory of immunity. But it may be objected that the evidence of benefit in the cases of pneumonia is equivocal, since in many untreated cases of that disease defervescence occurs early—on the fourth, fifth, or sixth day of the disease, and that little more than this was accomplished in the test cases. The regularity with which the critical symptoms followed upon the injections after an almost uniform interval of time seems to us, however, very forcibly to suggest a relationship of cause and effect between the treatment and the amelioration of the symptoms. And it should be remembered that at best such early crisis in untreated cases of pneumonia is exceptional. At all events, the harmlessness of the treatment is demonstrated, so that we may hope soon to be possessed of enough observations to remove all doubt.

Abscess of the Hand as a Complication of Gonorrhœa.

As a recent contribution to the long list of complications of gonorrhœa which have been shown to be due to the presence of the gonococcus in the remote lesion, we have the report of a case by Horwitz (*Wiener klinische Wochenschrift*, 1893, No. 4), in which a young man, twenty-seven years old, who had suffered from gleet for a year, was affected by an abscess on the back of the hand. Examination of its contained pus showed the presence of the gonococcus of Neisser, both microscopically and in cultures.

In a carefully compiled introduction, Horwitz reviews the cases of a similar nature which had been published up to the time of his writing.

Urinary Infection: its Causes.

The great importance of a correct knowledge of the nature of the various bacterial diseases of the urinary tract makes a recent contribution to the etiology of these diseases by Krogius of much interest (*Recherches bactériologiques sur l'Infection urinaire.* Helsingfors, 1892, 8vo., pp. 108). Krogius's observations extended to twenty-two carefully studied cases of urinary infection, some of them fatal, comprising cystitis, pyelo-nephritis, abscess of the bladder, and cases in which bacteria were present in the urine without apparent lesion of the urinary tract.

In all, five different species of bacteria were found, either acting as the causes of the various disorders or aggravating them by their presence. The most frequent of these was the bacillus coli communis, which was present in seventeen of the cases; proteus vulgaris occurred in two; staphylococcus pyogenes aureus in two; and the gonococcus in two. Commonly only one variety of micro-organism was present in each case; in three only was this not the case.

In four of the cases bacillus coli communis was found in the urine in large numbers without evidence of inflammation of the urinary tract, though in two of these there were fever and emaciation. The other cases in which bacillus coli communis was found, and those in which proteus vulgaris was present were of considerable severity, and in several the germs were detected after death in miliary abscesses of the kidneys, in abscesses of the bladder, in the blood, and in complicating lesions in various parts of the body. An important difference was observed between the cystitis caused by bacillus coli

communis and that of proteus vulgaris. In the former the reaction of the urine is acid, as the bacillus possesses only a slow decomposing action, while in the latter its reaction is strongly alkaline, proteus causing active ammoniacal fermentation. A marked difference in these germs as regards pathogenic power was disclosed by animal experiments. The mere introduction of a virulent culture of proteus into the bladder was sufficient to set up a decided cystitis, but artificial retention of urine was found to be a necessary adjuvant in the case of the bacillus.

Acute Ulcerative Endocarditis.

The *Bulletin of the Johns Hopkins Hospital* contains the report by W. T. Howard, Jr., of a case of acute ulcerative endocarditis due to the bacillus diphtheriæ. The lesion on the mitral valve was unmistakable, and Dr. Welch remarks, in commenting upon the case: "We found in pure culture and in large number in the valvular vegetations, the spleen, and the kidney, a bacillus absolutely indistinguishable from the Klebs-Loeffler bacillus of diphtheria in its morphological and cultural properties." The cultures were studied by Dr. Welch and by Dr. Abbott, of Philadelphia, with the result above quoted. Dr. Howard's bacillus was not pathogenic to guinea-pigs, but this can hardly be regarded as a valid point of distinction from Loeffler's bacillus, as the experiments of Roux and Yersin and of Abbott have shown that the genuine diphtheria bacillus may be devoid of pathogenic qualities as regards animals.

Admitting Howard's bacillus to be true diphtheria bacillus, we have here the first observation of its etiological relation to acute ulcerative endocarditis, and therewith an explanation of the occasional occurrence of endocarditis as a complication of diphtheria.

On the Nature and Origin of Casts of the Urinary Tubules.

The question as to the exact nature of urinary casts has never reached a satisfactory solution, notwithstanding much study and discussion. The origin of the epithelial, blood, and granular varieties is easily apparent, but to what are we to attribute the formation of the very common hyaline casts? Are they a changed exudate from the bloodvessels of the kidney, or are they composed of degenerated protoplasm of tubular epithelium?

The discussion of this subject has recently been reopened by P. Ernst (*Ziegler's Beiträge*, xii. 553) who expresses his belief that hyaline casts are in great part composed of changed fibrin, basing this opinion chiefly upon the manner in which certain stains, particularly Weigert's "fibrin" stain, color the hyaline material of which the casts are composed.

This view is objected to by O. Lubarsch (*Centralblatt für allgemeine Pathologie und pathologische Anatomie*, 1893, iv., No. 6, p. 209) on the grounds that a great variety of hyaline materials retain the color of Weigert's stain, although admittedly having nothing to do with fibrin; that the hyaline material of casts is furthermore stained by processes which fail to color fibrin; and that casts do not appear in those parts of the kidney in which exudations collect and where we should expect to find them were they the result of exudation from the bloodvessels. As the result of study of a large number of kidneys in various diseases, Lubarsch has found that fibrin occurs

in the tubules in acute inflammations of the organ, but rarely in the more chronic lesions, while it is in the chronic lesions more particularly that hyaline casts are abundant. Again, these could be found to have no special relation to the inflammatory processes in the kidney, but were closely associated with degenerative changes of various kinds. In some cases the conglomeration of small fragments of the degenerating epithelium, each fragment showing a hyaline appearance, could be seen. Lubarsch admits that occasionally the particles of degenerated epithelium may be cemented into solid casts by coagulated exudate. The exact nature of the degenerative change resulting in the formation of the hyaline material must at present remain unanswered.

RIBBERT (*Centralblatt f. allgemeine Pathologie und pathologische Anatomie*, 1893, iv., No. 11, p. 410) discusses the same subject but reaches a somewhat different conclusion. While admitting the justice of Lubarsch's criticism of the conclusion of Ernst in so far as it is based upon the results of particular methods of staining, and acknowledging that in many cases casts are undoubtedly derived from degenerated epithelial protoplasm, he is still of the opinion that in a large number of cases hyaline casts are nothing more than coagulated serum-albumin which has exuded from the bloodvessels, and has afterward, under the influence of certain chemical conditions, been coagulated into a formless transparent mass. This opinion is based upon observations made in the study of experimental nephritis induced in animals by exclusion of the blood from the kidney for an hour and a half by ligation of the renal artery. In this way an intense exudative nephritis was brought about on re-establishment of the circulation, and the tubules were found filled in many cases with clear serous exudate. When the kidney thus affected was subjected to heat or to the action of certain chemical agents this liquid exudate was coagulated into solid plugs in every particular resembling hyaline casts. In these cases, furthermore, degeneration of the tubular epithelium was insignificant and altogether too slight to act as a source of cast material. Ribbert also draws attention to the fact that when hyaline casts are found, albumin is either present in the urine at the time or has been present at an earlier stage of the disease, demonstrating the occurrence of exudation. When degeneration of the tubular epithelium alone occurs, as happens in some forms of poisoning and in some of the infectious diseases, hyaline casts are not found, though granular casts are usually exceedingly abundant.

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